Dorchester Swamp

Area of Natural and Scientific Interest (A.N.S.I.)

A Life Science Inventory

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Southwestern Region

Ontario
Ministry of Natural Resources
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PREFACE

The present study was undertaken as part of an on-going program by the Ontario Ministry of Natural Resources to provide more detailed information about provincially significant life science Areas of Natural and Scientific Interest (A.N.S.I.). The original studies, evaluated many natural areas in the search for the best representatives of various vegetation/landform combinations occurring within the different site districts of the province. The final choices were considered to be the ones most worthy of protection at the provincial level.

The Dorchester Swamp A.N.S.I. was selected as the best example of typical swamp wetland with a high diversity of vegetation types within the Mount Elgin Ridges physiographic region of Site District 7-6. This study provides a more in-depth inventory of the life science attributes of the area. The specific objectives and the methods used are presented in Chapter 2 of this report.

Although the number of vascular plant species listed in Appendix A is quite large, the inventory is considered a preliminary one. Further field work should produce additions to the list, including other rare species, which by their very nature, are not often encountered in the field and so have a high probability of remaining undetected. Non-vascular plants received little attention. Additional studies focusing on the fauna of the area would likewise result in the detection of other species.

The information that is provided should be regarded more as a sample of what can be expected throughout the area. Absence of a significant species from any given part of the area should not be construed as meaning that none exist in that particular location.

CONTENTS

PREFACE		i
CONTENTS		ii
LIST OF TABLES		iv
LIST OF FIGURES		v
SUMMARY		i
CHAPTER 1:	REGIONAL BACKGROUND	16
	(i) INTRODUCTION	16
	(ii) REGIONAL CONTEXT	20
	(iii) PHYSICAL AND HISTORICAL BACKGROUND	21
	(a) Bedrock Geology	21
	(b) Surficial Geology and Physiography	22
	(c) Soils and Moisture Regime	23
	(d) Climate and Microclimates	25
	(e) History	27
CHAPTER 2:	METHODS	28
CHAPTER 3:	VEGETATION AND FLORISTICS	34
	(i) INTRODUCTION	34
	(ii) COMMUNITY DESCRIPTIONS	35
	(iii) FLORISTICS	70
	(a) Taxonomic Analysis	70
	(b) Floral Affinities	77
CHAPTER 4:	FAUNA	83
	(i) BIRDS	83
	(ii) MAMMALS	85
	(iii) REPTILES AND AMPHIBIANS	86
	(iv) FISH	88
	(v) INVERTEBRATES	88
CHAPTER 5:	SIGNIFICANT FEATURES	90
	(i) SIGNIFICANT FLORA	90
	(ii) SIGNIFICANT FAUNA	95
	(iii) SIGNIFICANT PLANT COMMUNITIES OR ASSOCIATIONS	96
	(iv) OVERALL SIGNIFICANCE OF THE DORCHESTER SWAMP A.N.S.I.	97
ACKNOWLEDGEMENTS		102
GLOSSARY		104
REFERENCES		107
MAP REFERENCES		116

APPENDICES 117

APPENDIX A: CHECKLIST OF THE VASCULAR PLANTS OF THE DORCHESTER SWAMP AREA OF NATURAL AND SCIENTIFIC INTEREST 118

APPENDIX B: BIRDS OF THE DORCHESTER SWAMP AREA OF NATURAL AND SCIENTIFIC INTEREST 139

APPENDIX C: MAMMALS OF THE DORCHESTER SWAMP AREA OF NATURAL AND SCIENTIFIC INTEREST 143

APPENDIX D: AMPHIBIANS AND REPTILES OF THE DORCHESTER SWAMP AREA OF NATURAL AND SCIENTIFIC INTEREST 144

APPENDIX E: QUANTITATIVE ANALYSIS OF POINT-QUARTER AND QUADRAT VEGETATION SAMPLING DATA 145

APPENDIX F: RARE VASCULAR PLANT ATLAS FORMS 157

APPENDIX G: ONTARIO HERONRY INVENTORY; HERONRY REGISTRATION FORM 168

APPENDIX H: FISH OF THE DORCHESTER SWAMP CREEK 171

APPENDIX I: A PRELIMINARY LIST OF BUTTERFLIES FOR THE DORCHESTER SWAMP AREA OF NATURAL AND SCIENTIFIC INTEREST 172

APPENDIX J: PHOTOGRAPHS OF THE DORCHESTER SWAMP AREA OF NATURAL AND SCIENTIFIC INTEREST 174

APPENDIX K: CHECKLIST OF MOSSES, LIVERWORTS AND LICHENS OF THE IVEY (PUTNAM) TRACT BY DR. F.S. COOK (Taken from McLeod (1979)) (Approximately 1 km northeast of the Dorchester Swamp A.N.S.I.) 177

APPENDIX L: HERBARIUM LABELS FOR PROVINCIALLY RARE VASCULAR PLANT SPECIES WITHIN THE DORCHESTER SWAMP AREA OF NATURAL AND SCIENTIFIC INTEREST 180

LIST OF TABLES

TABLE		
1	Soils of the Dorchester Swamp A.N.S.I.	24
2a	Vegetation Classification Summary for the Dorchester Swamp A.N.S.I.	59
2b	Species Composition of the Naturally-occurring Plant Communities and Associations within the Dorchester Swamp A.N.S.I.	63
3	Vascular Plant Families Ranked According to the Number of Species Recorded for Each Within the Dorchester Swamp A.N.S.I.	72
4	Native, Alien and Rare Vascular Plant Totals for each Community Type within the Dorchester Swamp A.N.S.I.	73
5	Carolinian Flora of the Dorchester Swamp A.N.S.I.	78
6	Floristic Affinities of Selected Vascular Plants within the Dorchester Swamp A.N.S.I.	79
7	Significant Vascular Plants of the Dorchester Swamp A.N.S.I.	91
8	Hardwood-conifer Swamp (combined N.E. & S.W. quadrants) [black ash (42) - white cedar (42) - red maple (41) - yellow birch (40)] point-quarter analysis	146
9a	Hardwood-conifer Swamp (north-east quadrant) [yellow birch (57) - red maple (56) - white cedar (45) - trembling aspen (45)] point-quarter analysis	147
9b	Hardwood-conifer Swamp (north-east quadrant) [yellow birch (57) - red maple (46) - white cedar (45) - trembling aspen (45)] quadrat analysis	149
10a	Hardwood-conifer Swamp (south-west quadrant) [black ash (87) - white cedar (38) - red maple (36) - white elm (27)] point-quarter analysis	152
10b	Hardwood-conifer swamp (south-west quadrant) [black ash (87) - white cedar (38) - red maple (36) - white elm (27)] quadrat analysis	154

LIST OF FIGURES

FIGURE		
1	Regional Setting of Dorchester Swamp Area of Natural and Scientific Interest (A.N.S.I.)	17
2	Local Setting of Dorchester Swamp Area of Natural and Scientific Interest (Irregular line delineates A.N.S.I. boundary)	18
3	Plant communities/associations and significant features; Map, Scale 1:5000	Map at end
4	Vegetation matrix of communities occurring in the Dorchester Swamp A.N.S.I.	67

SUMMARY

The Dorchester Swamp Area of Natural and Scientific Interest (A.N.S.I.) is located in the southeastern corner of Middlesex County approximately 3 km south-east of the Village of Dorchester in parts of Lots 9 to 16 in Concession I of North Dorchester Township. It is approximately 548 ha (1354 acres) in size and is traversed in an east-west direction by provincial Highway 401 and in a north-south direction by provincial Highway 73 which intersect approximately in the middle of the swamp. Bounding it to the south is a wide hydro line corridor containing two rows of towers.

More than one-half of the A.N.S.I. is presently under public ownership, the major land holder being the Upper Thames River Conservation Authority with 520.5 acres at the end of 1985.

Much of the surrounding land is used for the production of tobacco, corn, rye and beans.

Recreational use of the area includes hunting, fishing, trapping, snowmobiling, bird-watching, nature study and archery target shooting.

The Township of North Dorchester official plan, designates the entire A.N.S.I. as an "Environmental Protection Area" with the declared intent to protect it "from further development for urban or agricultural uses" and to maintain it in its natural state. Surrounding lands are designated as "agricultural" except for two small areas near the north-central and south-east borders which are zoned "aggregate resources".

The Dorchester Swamp A.N.S.I. occurs within the Niagara Section of the Deciduous Forest Region where broad-leaved trees, and in particular sugar maple (Acer saccharum) and American beech (Fagus grandifolia) are the dominant components of the forest communities.

However, hemlock (Tsuga canadensis) and white pine (Pinus strobus) are also present in drier upland areas, while white cedar (Thuja occidentalis) and the occasional tamarack (Larix laricina) occur on wetter sites. Silver maple (Acer saccharinum) and blue beech (Carpinus caroliniana) are usually found on wet-mesic to wet sites.

This A.N.S.I. is just outside the northern edge of the Carolinian Floristic Zone and its influence is seen in the presence of such species as black cherry (Prunus serotina), oaks (Quercus spp.) and hickories (Carya spp.) which are characteristic of that zone.

The A.N.S.I. falls within Site District 6 of Site Region 7 according to the land capability classification system of Angus Hills (1959). It was selected by Hanna (1984) as the best representative of a swamp wetland within this site district, because of the high diversity and typical nature of the vegetation types present.

The topography of the area is generally flat and of glacial origin, the material being mainly glaciofluvial outwash and deltaic sand deposits between 23 (75 ft.) and 31 (100 ft.) metres in depth over bedrock classified as Middle Devonian - Detroit River Group lobe of the Lucas Formation. The A.N.S.I. lies at the base of the northern slope of the Ingersoll Moraine within the Mount Elgin Ridges physiographic region but adjacent to the valley of the Thames River (South Branch) and within that watershed. Surface elevations within the A.N.S.I. range from 257 m (843 ft.) in the north-west to 265 (870 ft.) in the south-east. The swamp is naturally drained by the Dorchester Swamp Creek to the north-west into the Thames River. Muck soils cover approximately 82 percent of the area while the remainder is covered by Fox sandy loam (16%) and Granby sand (2%). The water table varies from above the surface in the muck soil areas during the spring season to slightly below the surface by late summer. However,

some standing water is present all year in depressions or pot holes resulting from windthrows. Thus, a wet to very wet moisture regime prevails for most of the year in the lowlands. The sandy loam uplands are usually in the mesic to wet-mesic range.

Climatic conditions are somewhat more severe than for areas closer to Lake Erie. The main microclimatic effect is derived from the high water table, the occurrence of permanently standing water and presence of dense vegetation. These factors result in slightly cooler air temperatures and higher humidity during the growing season and in slightly warmer air temperatures in the winter.

Naturally-occurring vegetation is classified within the two broad landform categories of uplands and lowlands (wetlands) which occupy approximately 14 percent and 76 percent of the total area respectively. The remaining 10 percent consists of a few small conifer plantations plus the highway rights-of-way and the cloverleaf area at their intersection.

Twelve community types or complexes have been identified within the area, nine of which are naturally-occurring and contribute toward the A.N.S.I. representation. These are listed in summary form along with the component associations and in chart form giving the dominant components of the various strata within each association in the following tables:

Vegetation Classification Summary for the
Dorchester Swamp A.N.S.I.

I UPLANDS

1 DECIDUOUS FOREST: sugar maple - black cherry community on mesic sandy loam

a sugar maple (Acer saccharum) (5) - black cherry (Prunus serotina) (2) - basswood (Tilia americana) (2) - white ash (Fraxinus americana) (0.5) - American beech (Fagus grandifolia) (0.5) association on mesic sandy loam

b trembling aspen (Populus tremuloides) - black cherry (Prunus serotina) - sugar maple (Acer saccharum) - blue beech (Carpinus caroliniana) - witch-hazel (Hamamelis virginiana) successional association on mesic sandy loam

2 MIXED FOREST: hemlock - yellow birch - sugar maple - blue beech - white ash - red maple - white pine - white cedar community on mesic to wet-mesic sandy loam.

a hemlock (Tsuga canadensis) (4.5) - sugar maple (Acer saccharum) (4.0) - black cherry (Prunus serotina) (1.0) - yellow birch (Betula alleghaniensis) (0.5) association on mesic sandy loam

b hemlock (Tsuga canadensis) (3.25) - blue beech (Carpinus caroliniana) (3.0) - white pine (Pinus strobus) (1.5) - white oak (Quercus alba) (1.25) - red maple (Acer rubrum) (0.75) - white ash (Fraxinus americana) (0.25) association on mesic to wet-mesic sandy loam

c hemlock (Tsuga canadensis) (7.0) - sugar maple (Acer saccharum) (2.0) - silver maple (Acer saccharinum) (0.5) - American beech (Fagus grandifolia) (0.25) - white ash (Fraxinus americana) (0.25) - red maple (Acer rubrum) - black cherry (Prunus serotina) association on mesic sandy loam

d hemlock (Tsuga canadensis) (4.5) - yellow birch (Betula alleghaniensis) (2.5) - red maple (Acer rubrum) (1.5) - basswood (Tilia americana) (1.0) - black ash (Fraxinus nigra) (0.5) - white ash (Fraxinus americana) (0.5) association on mesic to wet-mesic sandy loam

e white cedar (Thuja occidentalis) (4.0) - yellow birch (Betula alleghaniensis) (2.5) - blue beech (carpinus caroliniana) (1.0) - black cherry (Prunus serotina) (1.0) - trembling aspen (Populus tremuloides) (0.5) - white pine (Pinus strobus) (0.5) - white ash (Fraxinus americana) (0.5) association on mesic to wet-mesic sandy loam

II LOWLANDS (WETLANDS)

3 HARDWOOD - CONIFER (MIXED) SWAMP: black ash (Fraxinus nigra) (42) - white cedar (Thuja occidentalis) (42) - red maple (Acer rubrum) (41) - yellow birch (Betula alleghaniensis) (40) - trembling aspen (Populus tremuloides) (24) - white pine (Pinus strobus) (21) - white elm (Ulmus americana) (20) community on wet-mesic to wet muck soil (combined results of associations 3a and 3b)

a yellow birch (Betula alleghaniensis) (57) - red maple (Acer rubrum) (46) - white cedar (Thuja occidentalis) (45) - trembling aspen (Populus tremuloides) (45) - white pine (Pinus strobus) (31) - white elm (Ulmus americana) (15) - silver maple (Acer saccharinum) (15) association on wet muck soil

b black ash (Fraxinus nigra) (87) - white cedar (Thuja occidentalis) (38) - red maple (Acer rubrum) (36) - white elm (Ulmus americana) (27) - black cherry (Prunus serotina) (21) - yellow birch (Betula alleghaniensis) (21) - tamarack (Larix laricina) (18) - hemlock (Tsuga canadensis) (17) association on wet--mesic to wet muck soil

c yellow birch (Betula alleghaniensis) (2.75) - silver maple (Acer saccharinum) (2.75) - black ash (Fraxinus nigra) (2.0) - red maple (Acer rubrum) (1.25) - basswood (Tilia americana) (0.5) - white cedar (Thuja occidentalis) (0.25) - white elm (Ulmus americana) (0.25) - hemlock (Tsuga canadensis) (0.25) association on wet muck soil

4 CONIFER - HARDWOOD (MIXED) SWAMP: white cedar - yellow birch-hemlock - red maple - tamarack - black ash community on wet-mesic to wet muck soil

a white cedar (Thuja occidentalis) (4.5) - yellow birch (Betula alleghaniensis) (4.0) - black ash (Fraxinus nigra) (0.75) - hemlock (Tsuga canadensis) (0.25) - red maple (Acer rubrum) (0.25) - tamarack (Larix laricina) (0.25) - white pine (Pinus strobus) association on wet muck soil

b white cedar (Thuja occidentalis) (4.5) - tamarack (Larix laricina) (2.0) - trembling aspen (Populus tremuloides) (1.0) - hemlock (Tsuga canadensis) (1.0) - red maple (Acer rubrum) (0.5) - black ash (Fraxinus nigra) (0.5) - yellow birch (Betula alleghaniensis) (0.5) association on wet-mesic to wet muck soil

c white cedar (Thuja occidentalis) (3.25) - hemlock (Tsuga canadensis) (2.5) - red maple (Acer rubrum) (2.25) - yellow birch (Betula alleghaniensis) (1.5) - white elm (Ulmus americana) (0.25) - black ash (Fraxinus nigra) (0.25) association on wet muck soil

5 HARDWOOD SWAMP: silver maple - red maple - black ash - white elm - yellow birch - poplar - willow community on wet muck soil

a silver maple (Acer saccharinum) (8) - red maple (Acer rubrum) (1) - yellow birch (Betula alleghaniensis) (1) association on wet muck soil

b silver maple (Acer saccharinum) (4.5) - cottonwood (Populus deltoides) (2.0) - white ash (Fraxinus americana) (1.0) - black ash (Fraxinus nigra) (1.0) - white elm (Ulmus americana) (1.0) - red maple (Acer rubrum) (0.5) association on wet muck soil

c silver maple (Acer saccharinum) (5) - willow (Salix spp.) (5) association on wet muck soil

d red maple (Acer rubrum) (4) - yellow birch (Betula alleghaniensis) (3) - white elm (Ulmus americana) (1) - silver maple (Acer saccharinum) (1) - black ash (Fraxinus nigra) (1) association on wet muck soil

e trembling aspen (Populus tremuloides) (3) - red maple (Acer rubrum) (2) - silver maple (Acer saccharinum) (1) - blue beech (Carpinus caroliniana) (1) - balsam poplar (Populus balsamifera) (1) - black ash (Fraxinus nigra) (1) - white elm (Ulmus americana) (1) association on wet muck soil

6 TALL SHRUB (THICKET) SWAMP: dogwood - willow community on very wet muck soil

a dogwood (Cornus spp.) - willow (Salix spp.) - winterberry (Ilex verticillata) - mountain-holly (Nemopanthus mucronata) - blueberry (Vaccinium spp.) association on very wet muck soil

b willow (Salix spp.) - dogwood (Cornus spp.) white cedar (Thuja occidentalis) - common elderberry (Sambucus canadensis) - high-bush cranberry (Viburnum trilobum) - nannyberry (Viburnum lentago) - alder-leaved buckthorn (Rhamnus alnifolia) association on very wet muck soil

7 CAT-TAIL (Typha spp.) MARSH: on very wet to saturated muck soil

8 LOW SHRUB - HERB COMMUNITY: black huckleberry (Gaylussacia baccata) - climbing nightshade (Solanum dulcamara) - sedge (Carex spp.) - large cranberry (Vaccinium macrocarpon) - moss (Sphagnum sp.) on very wet to saturated peaty muck soil at pond margin

9 POND VEGETATION: yellow pond lily (Nuphar variegatum) - variable pondweed (Potamogeton gramineus) floating aquatic macrophyte community

OW - unvegetated open water - not a community or association but included here for completeness to indicate the nature of the remaining area

III ANTHROPOGENIC

10 PLANTATION: conifer and conifer-hardwood communities
- a red pine (Pinus resinosa) - white pine (Pinus strobus) - scotch pine (Pinus sylvestris) community on dry-mesic sandy loam
- b white pine (Pinus strobus) - white spruce (Picea glauca) - Norway spruce (Picea abies) - European larch (Larix decidua) community on dry-mesic to mesic sandy loam
- c white pine (Pinus strobus) - black walnut (Juglans nigra) - European larch (Larix decidua) community on dry-mesic to mesic sandy loam

11 HIGHWAY RIGHTS-OF-WAY:
- a graminoid - weedy alien community complex on dry-mesic to wet-mesic sandy loam of cloverleaf area
- b graminoid - weedy alien community complex on dry to very wet sandy loam, gravel fill or muck soils of roadsides

12 HYDRO LINE CORRIDOR: community complex on dry-mesic to very wet sandy loam or muck soils

Species composition of the naturally-occurring plant communities and associations within the Dorchester Swamp A.N.S.I.

species \ community association	1			2				3			4			5				6		7	8	9
	a	b	a	b	c	d	e	a	b	c	a	b	c	a	b	c	d	e	a	b			
OVERSTORY																							
Acer rubrum				5	6	3		2	3	4	4	5	3	2	6		1	2		X			
A. saccharinum					3			6		1				1	1	1	3	3	X	X			
A. saccharum	1	3	2		2				X								X						
Betula alleghaniensis			4			2	2	1	5	1	2	5	4	2			2			X			
Carpinus caroliniana		4		2			3		X									3					
Fagus grandifolia	4		X		4		X	X															
Fraxinus americana	4			6	4	5	5	X	X						3								
F. nigra						5		X	1	3	3	5	5		3		3	3	X	X			
Larix laricina									7		4	2			X				X				
Pinus strobus				3			5	5	X		7												
Populus balsamifera									X			X						3		X			
P. deltoides								X				X			2								
P. tremuloides		1					5	3	X			3						1	X	X			
Prunus serotina	2	2	3		6		3	X	5			X			X		X	X					
Quercus alba				4					X								X						
Salix spp.								X								1			X	X			
Thuja occidentalis							1	3	2	6	1	1	1				X	X	X	X			

Species composition of the naturally-occurring plant communities and associations within the Dorchester Swamp A.N.S.I.

species \ community association	1		2					3			4			5					6		7	8	9
	a	b	a	b	c	d	e	a	b	c	a	b	c	a	b	c	d	e	a	b			
Tilia americana	2					4		X	X	5							X			X			
Tsuga canadensis			1	1	1	1		X	8	6	4	3	2				X						
Ulmus americana						X	X	6	4	6			5		3		3	3		X			
UNDERSTORY (Shrubs, Saplings, Vines)																							
Acer rubrum								D	X														
A. saccharum	D	X	X		X																		
A. saccharinum								D						X									
Betula alleghaniensis								D	D														
Carpinus caroliniana									D									X					
Cornus stolonifera								X	X	X					X	X	X	X	D	D	X		
Cornus spp.															D				D	D			
Fraxinus nigra								D	D														
Gaylussacia baccata																			X			X	
Hamamelis virginiana		D					D		X				X				X	X					
Ilex verticillata									X			X			X				D				
Lonicera canadensis							D			X	D				X		X						
Nemopanthus mucronata															X				D				

Species composition of the naturally-occurring plant communities and associations within the Dorchester Swamp A.N.S.I.

species \ community association	1		2					3			4			5					6		7	8	9
	a	b	a	b	c	d	e	a	b	c	a	b	c	a	b	c	d	e	a	b			
Parthenocissus inserta	X		X					D	D		X	X		D						X			
Populus tremuloides								X	D														
Prunus virginiana				X					D			X			X		X			X			
Ribes americanum								D	D	D	D			D						X			
Rubus idaeus		X	X						D	D					X		X	X		D			
Salix spp.																			D	D			
Sambucus canadensis			X					X							X		X	X		D			
Thuja occidentalis							D	D	D	D	D	D	D						X	D			
Tilia americana									D														
Ulmus americana								X	D														
GROUND COVER																							
Acer rubrum seedlings						D		X	X	D		X			X								
Aster puniceus								X	D	X		X			X		X	X	X	X	X		
Betula alleghaniensis seedlings									D	D													
Bryophytes (mosses & liverworts)	X		X	X	X	X	X	D	D	D	D	D	D	X	X		X	X	X	X	X		
Carex spp.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	D	D	X	D	
Cypripedium reginae								X	X	X		D	X		X					X			
Dryopteris marginalis	X		X			X	D	X	X	X	D	X	X	D	X		X	X					
D. spinulosa	X		X		X		X	X	X	X	X	X	D	X	X		X	X					
Fagus grandifolia seedlings							D																
Fraxinus nigra seedlings						X		X	D	D	X	X											

Species composition of the naturally-occurring plant communities and associations within the Dorchester Swamp A.N.S.I.

species \ community association	1		2					3			4			5				6		7	8	9
	a	b	a	b	c	d	e	a	b	c	a	b	c	a	b	c	d	e	a	b			
Geranium maculatum	D		X	X	X	X									X		X	X					
Glyceria striata								X	D	X	X	X	X	X	X		X	X	X	X			
Impatiens capensis								D	D	D	D	X	X	D	D	X	X	X	X	X	X		
Nuphar variegatum																							D
Onoclea sensibilis				X			D	D	D	D	D	D	D	D	D		X	X	X	D	X		
Osmunda cinnamomea			X				D	X	X	X	D	X	D		X		X	X	X	D			
Rhus radicans	X	X	X	X			X	X	D	D	X	D	X	X	X		X	X	X	X			
Rubus pubescens								D	D	X	X	X	X		X		X	X	X	X			
Solanum dulcamara								X	X	X	X	X		D		X	X	X	X	D	X	D	
Symplocarpus foetidus							X	D	D	D	D	D	D	D	X		X	X	X	D	X		
Thelypteris palustris								X	D	X	X	X	X	X	X		X	X	X	X	X		
Tiarella cordifolia	D			X		X			X	X			X		X		X	X					
Trillium grandiflorum	X	X	X			X	D	X	X	X	X		X		X		X	X					
Typha angustifolia																					D		
T. latifolia								X							X				X	D			
Vaccinium macrocarpon																						D	

3 Refers to order of dominance of tree species
D Dominant in at least some parts of the community or association
X Present but not as a dominant; used here for completeness to show overall distribution of the dominant species (in at least one community or association) listed.
Refer to Appendix A for additional species in a given community or association.

There were 604 kinds of vascular plants identified within the Dorchester Swamp A.N.S.I. during the study, 485 of which are native to North America. Ninety-three families are represented. Just three of these, the aster (Asteraceae), the grass (Poaceae) and the sedge (Cyperaceae) families account for almost 32 percent (188) of the total number of vascular plants, having 68, 63 and 57 species respectively. The four swamp community types and the highway rights-of-way have the greatest diversity of native species and, with the exception of the conifer-hardwood swamp, the most rare species as well. However, the highway rights-of-way are highly disturbed with a very low native to alien species ratio while the opposite is true for the four swamp and two upland forest communities.

The swamp is rich in club-mosses (Lycopodium spp.), ferns, Carex sedges, rush family (Juncaceae) members, orchids (Orchidaceae) and willows (Salix spp.).

A great diversity and abundance of mosses is also present, as well as a good array of liverworts, lichens and fungi.

Many vascular plants within the A.N.S.I. have a southern affinity. Ten of these are typical of the Carolinian Floristic Zone. Northern species characteristic of the Boreal Forest Floral Region are also well represented here. A lesser number of species have affinities with either a western or eastern flora.

The presence of two species within the A.N.S.I., long manna grass (Glyceria melicaria) and Nuttall alkali grass (Puccinellia nuttalliana) represent extensive southward extensions of the ranges for these species in Ontario. It has also been tentatively determined that the presence of northern starwort (Stellaria calycantha) and small bur-reed (Sparganium minimum) constitute slight southward extensions of their ranges within the province.

Eighty-seven bird species were recorded for the area within a five-month period and seventy-two of these were considered to have at least possible breeding status within the A.N.S.I. Seven are rare breeders. Two of these, the Northern Waterthrush and White-throated Sparrow usually breed farther north while the Blue-gray Gnatcatcher, Yellow-throated Vireo, Golden-winged Warbler and Blue-winged Warbler generally breed farther south. A recently established heronry was discovered for the Great Blue Heron, a rare local breeder. Very few winter residents were recorded because the study period did not extend into this season.

Twelve mammals or their signs were observed within the A.N.S.I. by the author and good evidence was obtained from local trappers for the presence of four more species.

The swamp is classed as an area of deer range and concentration by the Ontario Ministry of Natural Resources and is especially important for wintering purposes.

The main fur-bearers harvested are Muskrat, Raccoon, Mink and Red Fox, but the presence of Coyote and American Beaver has also been reported by local trappers.

Only two reptiles, the Midland Painted Turtle and the Eastern Garter Snake, were observed within the study area, but five others no doubt exist given their known occurrence nearby and the availability of suitable habitat within the A.N.S.I.

Eight amphibians were recorded during the study: one salamander (Red-backed Salamander), one toad (American Toad), three treefrogs (Northern Spring Peeper, Tetraploid Gray Treefrog, Midland Chorus Frog) and three true frogs (Green Frog, Wood Frog, Northern Leopard Frog). All are common to very common. The Bullfrog has been previously reported from the area and two other salamanders and a newt

are to be expected. Bullfrog populations have declined in some areas of Ontario because of being harvested for their legs. Regulations are now in effect in Ontario to prevent over-harvesting.

Twenty-three fish species have been reported from the Dorchester Swamp Creek, seven of which were taken from the A.N.S.I. portion of it including the Brook Trout or Char. The creek now supports a small Brook Trout sport fishery which appears to have become permanently established since stocking efforts were terminated for this species by the 1970s. Attempts to establish Rainbow Trout and Brown Trout, however, have proven unsuccessful.

Several kinds of butterflies and moths also occur within the study area. Two of the latter are reported to be rare locally.

Forty-six of the vascular plants are considered to be significant. Six are rare in Ontario, 10 are rare in Canada and 38 are rare in Middlesex County. The provincially rare species are: rough dropseed (Sporobolus asper), margined rush (Juncus marginatus), yellow ladies'-tresses (Spiranthes ochroleuca), horsebalm (Collinsonia canadensis), small beggarticks (Bidens discoidea) and sweet Joe-Pye-weed (Eupatorium purpureum). Of these only the margined rush is rare at all three levels, while the rough dropseed, horsebalm and sweet Joe-Pye-weed are rare both provincially and nationally. Seventeen species have not been previously reported for Middlesex County.

The nine naturally-occurring communities, while not being considered unique, are quite typical of a swamp and the communities commonly associated with one in Site District 7-6. Thus they contribute both to the overall diversity and representativeness of the Dorchester Swamp A.N.S.I.

The significance of the A.N.S.I. is based on five standard site selection criteria. These are: representation, diversity, condition (degree of disturbance), ecological considerations (size, configuration, sensitivity and vulnerability to disturbance, etc.) and special features (rare plants, animals, communities, etc.). The conclusion reached as a result of the present study is that the Dorchester Swamp A.N.S.I. is above average with respect to the first two and the last criteria mentioned when compared to other areas in southwestern Ontario. All naturally-occurring communities are presently experiencing only minimal human disturbance with a very limited impact and are thus in a reasonably good condition. Given as well its relatively large size and the present favourable zoning designation for both the swamp itself and adjacent lands, the Dorchester Swamp A.N.S.I. is thus considered to be an excellent representative of a swamp within Site District 7-6, provided the negative visual impact resulting from the presence of the two provincial highways and the adjacent hydro line corridor is ignored.

CHAPTER 1: REGIONAL BACKGROUND

(i) INTRODUCTION

The Dorchester Swamp Life Science Area of Natural and Scientific Interest (A.N.S.I.) is located in southeastern Middlesex County (Figure 1). It is situated 3 km south-east of the village of Dorchester which is 13 km east of London. The area is comprised of parts of Lots 9 to 16 in Concession I of North Dorchester Township in Middlesex County (Figure 2). It is rectangular in shape with the long axis being approximately 4.5 km (2.8 miles) in length and oriented in an east-west direction, while the width is about 1.25 km (0.8 miles). The total area is approximately 548 ha (1354 acres) although it was given as only 380 ha (ca. 930 acres) by Hanna (1984). Hilts (1979) reports 538 (1330 acres) exclusive of the two highway rights-of-ways.

Provincial Highways 401 and 73 bisect the swamp into north/south and east/west portions respectively, thus dividing the area into quadrants centered on their intersection in approximately the middle of the swamp. Pedestrian access is possible with landowner permission from either of the two highways or via the hydro line corridor in the southern half. In the north, pedestrian access may also be gained from the highways, or from Slo-pitch Road along part of the northern boundary and from the township roads bordering the site on the east and west. A snowmobile trail has been constructed through the northern half by the Donny Brook Drifter Snowmobile Club as part of the Dorchester to Putnam route. Entrances are at the east and west edges. Its course is marked by orange flagging tape and yellow circle markers fastened to tree trunks. Other vehicular access is limited to old logging trails which enter the swamp in a few places from adjacent farmlands. The following notice has been posted on the fence

Figure 1

Regional Setting

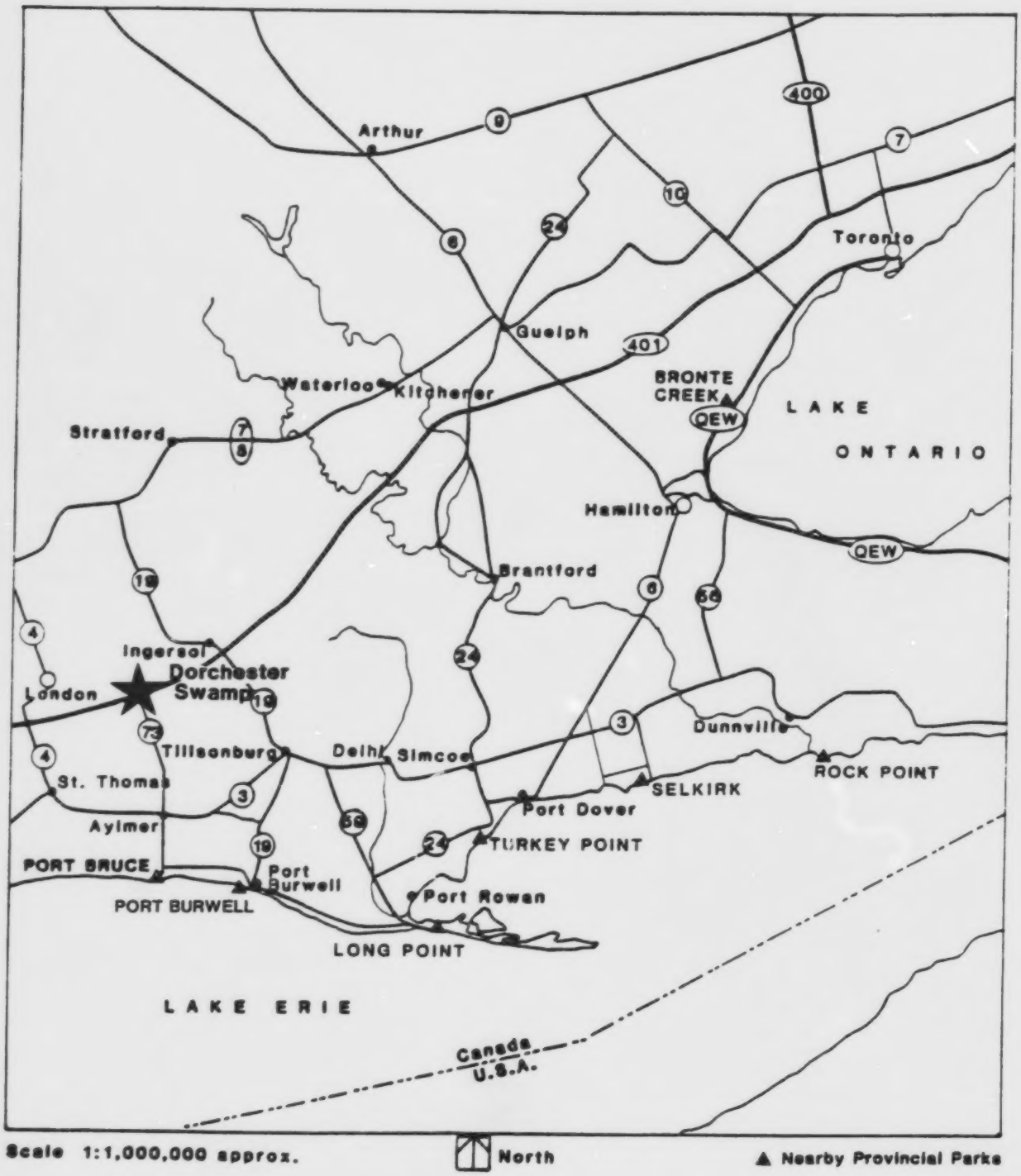
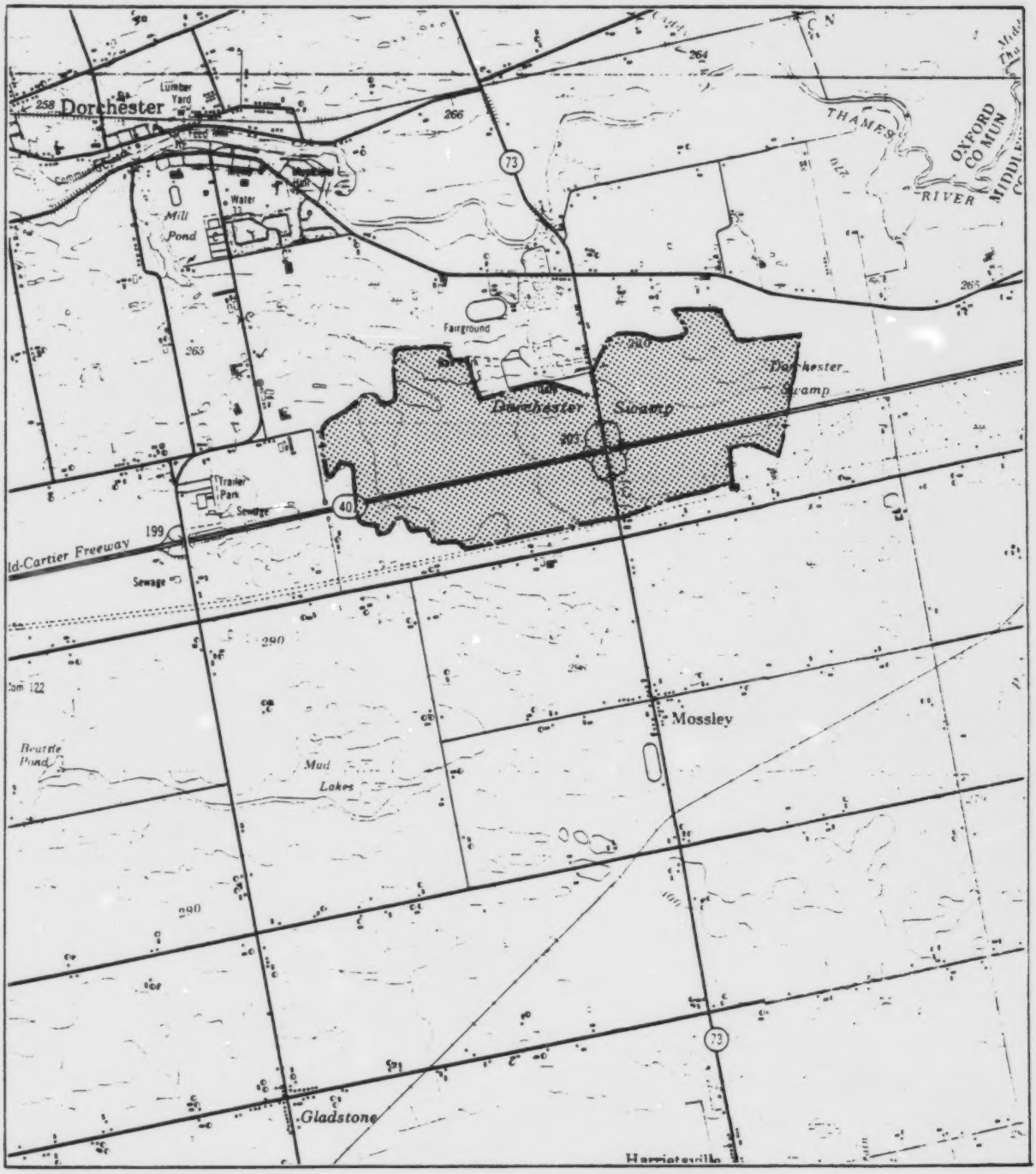


Figure 2

Local Setting of Dorchester Swamp - A.N.S.I.

IRREGULAR LINE DELINEATES A.N.S.I BOUNDARY



NATIONAL TOPOGRAPHIC MAP SERIES, MAP NO. 40-I/14, 40-I/15, 1:50,000

along the 401 in the north-west quadrant: "Notice : This is a controlled access highway by provincial statute. Prospective purchasers of adjoining properties are cautioned to make inquiries regarding entrance and building permits. For information contact Dept. Transportation and Communications district office, London."

More than one-half of the A.N.S.I. is presently under public ownership with the remainder being privately owned. The Upper Thames River Conservation Authority is the major land holder, owning 211 ha (520.5 acres) at the end of 1985 (Diver, pers. comm. 1986). This, together with the holdings of the county of Middlesex (ca. 35 ha) and the Ministry of Transportation and Communications (ca. 52 ha of highways 401 and 73 rights-of-way) accounts for approximately 298 ha or 54% of the area.

Although there is evidence of timber harvesting throughout much of the area, no Woodlands Improvement Act (W.I.A.) agreements exist on A.N.S.I. lands with any of the private landowners. However, there is one on a 2.4 ha (6 acres) site adjacent to the southern boundary of the A.N.S.I. in part of the east half of Lot 12 in Concession I. It was reforested with white spruce (4250) and white pine (500) in April 1984 for site protection, aesthetic values and production of commercial wood products. This represents a return of the land to its original use after an unsuccessful attempt to convert it to agricultural crop production (W.I.A. No. 81-998; O.M.N.R., Aylmer District files). Occasional attempts are still being made to reclaim land from the margin of the swamp through clearing and drainage activities, but with little or no apparent success. There are two Agreement forests within the A.N.S.I.: the Middlesex County Agreement Forest (Banks Tract) adjacent to Highway 73 in the south-west quadrant, and the Upper Thames River Conservation Authority Agreement

Forest comprised of 24 parcels totalling 151 ha (373 acres) in the north-east and north-west quadrants (O'Neill, pers. comm. 1986).

Most of the surrounding land is used for the production of annual crops. Tobacco, corn, rye and beans were the main ones grown in 1985.

Adjacent non-agricultural land uses include non-farm residences, a trailer park, a fairground, a sports club, and sand and gravel pits.

Five licenced aggregate pits occur nearby. Three of these are clustered together north of the A.N.S.I., west of Highway 73, while the other two are near the south-eastern corner of the area south of the 401. The former three are mainly shallow sand deposits, but the latter two are relatively deep deposits (6 to 8 m) containing 60 to 70 percent gravel (O.M.N.R., 1982).

Recreational use of the area includes hunting, fishing, trapping, snowmobiling, bird-watching, nature study and archery target shooting (Photos L7, L39, L40, Appendix J).

The official plan for the Township of North Dorchester planning area, designates the entire A.N.S.I. as an "Environmental Protection Area" with the declared intent to protect it "from further development for urban or agricultural uses" and to maintain it in its natural state (Township of North Dorchester, 1981). This zoning designation may be amended to "Public Water Supply Protection Area" (O.M.N.R., 1983a). All surrounding lands are designated as "agricultural" except for the aggregate pit areas mentioned previously which are zoned "aggregate resources" (ibid.).

(ii) REGIONAL CONTEXT

The Dorchester Swamp A.N.S.I. falls within the Niagara Section of the Deciduous Forest Region as delineated by Rowe (1972).
Broad-leaved trees are usually the dominant components of the forest

communities, although hemlock (Tsuga canadensis) and white pine (Pinus strobus) may be found in upland areas and white cedar (Thuja occidentalis) and tamarack (Larix laricina) on wetter sites. The most common upland forest species are sugar maple (Acer saccharum), American beech (Fagus grandifolia), basswood (Tilia americana), red maple (Acer rubrum) and red, white and bur oaks (Quercus spp.). Species with a southern affinity such as black cherry (Prunus serotina), and hickories (Carya spp.) are also present. Silver maple (Acer saccharinum) and blue beech (Carpinus caroliniana) are usually to be found on the wet-mesic to wet sites (ibid.).

The northern boundary for the Carolinian Floristic Zone in Canada, as delineated by Fox and Soper (1954), excludes the Dorchester Swamp A.N.S.I. but comes within ten kilometres to the east and west of the site. Since this boundary represents only an average for the northern limits of twenty-six species restricted to the Carolinian Zone in Southern Ontario, it would be expected that some of these species should occur within the study area.

This A.N.S.I. falls within Site District 6 of Site Region 7, according to the land capability classification scheme devised by Hills (1959). In spite of its high degree of disturbance it was selected as the best representative of a swamp wetland within this site district, because of the high diversity and typical nature of the vegetation types present (Hanna, 1984).

(iii) PHYSICAL AND HISTORICAL BACKGROUND

(a) Bedrock Geology:

The bedrock underlying the Dorchester Swamp A.N.S.I. is classified as Middle Devonian - Detroit River Group lobe of the Lucas Formation. Its lower member, the Dundee Formation, borders it along the southern and western boundary of the A.N.S.I. The bedrock

material is a brown and tan microcrystalline and sublithographic limestone (Canada Department of Energy, Mines and Resources - Map 1263A, 1969). Elevation of the bedrock surface is approximately 234 metres (768 ft.) above sea level. Depth to bedrock varies from 23 metres (75 ft.) of overlying glacial drift at the lowest surface elevation near the north-west corner of the swamp, to 31 metres (ca. 100 ft.) along the southern and eastern boundaries (Barnett and Starkoski, 1978).

The overlying material throughout the A.N.S.I. is glaciofluvial outwash and deltaic deposits of sand associated with Glacial Lake Whittlesey, except for a very small area at the eastern edge south of the 401 where glaciolacustrine deepwater deposits of massive to laminated clay with some silt is present (Barnett and Girard, 1982).

Subsequent soil formation processes at the surface of these parent materials have modified them. However, the contribution of each material to the present soil types is quite evident in the vegetation types which develop on these soils.

(b) Surficial Geology and Physiography:

The Dorchester Swamp A.N.S.I. is located within the Mount Elgin Ridges physiographic region (Chapman and Putnam, 1984). This is a long narrow area stretching from St. Thomas in the southwest to beyond Woodstock in the northeast. It lies between the Thames River (South Branch) valley to the north and the Norfolk sand plain to the southeast and consists of a succession of ridges and vales parallel to the long axis of the area. The elevation of the vales varies from 244m (800 ft.) in the southwest to 27m (900 ft.) in the northeast while the crests of the ridges are approximately 31 m (100 ft.) higher than the adjacent lowlands throughout (ibid.).

The most northerly ridge is the Ingersoll Moraine and it is at

the base of its northern slope, adjacent to an old spillway of the Thames River, that the Dorchester Swamp lies. This slope drains directly into the Thames River (ibid.). Thus, the A.N.S.I. falls within the Upper Thames River watershed which is under the water management jurisdiction of the Upper Thames River Conservation Authority.

The surface elevation within the A.N.S.I. varies from 257 m (843 ft.) in the northwestern corner to 265 m (870 ft.) along the southern and eastern boundaries for a maximum difference of about 8 m (26 ft.). Natural drainage is via the Dorchester Swamp Creek and its tributary streams. The creek exits from the area at its lowest elevation in the northwest corner and flows for another 3 km in a northwesterly direction to the west end of the village of Dorchester where it discharges into the South Branch of the Thames River.

(c) Soils and Moisture Regime:

Three soil series are represented within the A.N.S.I. These are given in Table 1 with the soil type and percentage of the area covered by each.

TABLE 1: SOILS OF THE DORCHESTER SWAMP A.N.S.I. (Experimental Farms Service, Soil Survey Report No. 6, County of Middlesex, 1931)

Soil Series	Soil Type/Description	Approximate % of Area
Muck	black well decomposed organic material of varying depths over sand, clay or marl; stonefree	82
Fox	sandy loam/light brown and yellow sandy loam over reddish brown loam and then stratified grey sand and gravel; stonefree	16
Granby	sand/dark brown or nearly black sand over grey or slightly mottled sand; stonefree	2

Muck soils occur over most of the site, accounting for 82 percent of the total area alone. This soil type is the product of the nearly flat topography and very poor natural drainage together with the accumulation of organic plant debris over the parent sandy outwash material. All lowland vegetation types occur on muck soil which has a pH in the neutral to alkaline range.

Fox sandy loam surrounds the central muck area and with the exception of a small portion in the north-east is the main soil supporting the upland vegetation types. Granby sand occurs in the area where plantations have been established at the eastern boundary on the north side of Highway 401. The topography of these two soils is level to undulating. However, Fox sandy loam is moderately acid and has very good to excessive drainage, while the Granby sand is neutral to alkaline and is very poorly drained.

The water table is usually above the surface in the area with muck soil during the spring season when snow meltwaters flood the lowlands. However, by mid to late summer the water table is found slightly below the surface, although some standing water may still be present in depressions or pot holes throughout the area even at this time. Thus, a wet to very wet moisture regime usually prevails for most of the year.

The moisture regime in the sandy loam upland areas is usually in the mesic range but may vary toward the wet-mesic state in the spring or within the transition zone between the sandy loam and muck soils.

(d) Climate and Microclimates:

The Dorchester Swamp A.N.S.I. is located within the most southern part of the South Slopes climatic region (Brown et al., 1980). They define a climatic region as a contiguous area with a relatively uniform climate. Delineation of the regions was based on weather records for a thirty-year period from 1931 to 1960.

The South Slopes is a long, narrow, inland region stretching from southeastern Huron County on the west to Kingston in the east and having no direct contact with any of the Great Lakes. Although the Great Lakes moderate the climate throughout all of southwestern Ontario, conditions are somewhat more severe in this region than for those immediately adjacent to the lakes. Mean daily maximum temperature for the region varies from -2 degrees Celsius for January, to 27 degrees Celsius for the month of July. The mean daily minimum temperature ranges from -11 degrees Celsius for the month of January, to 14 degrees Celsius during July. The mean annual frost free period is 145 days and the mean annual length of the growing season is 205 days. Mean annual precipitation is 76 - 97 cm (30 - 38 inches) and snowfall is 178 cm (70 inches) (ibid.).

The main microclimatic effects within the A.N.S.I. are derived from the high water table and occurrence of permanently standing water together with the presence of dense vegetation. These factors contribute to an increase in the humidity and slightly cooler temperatures within the immediate area during the growing season, through the processes of evaporation and transpiration. Vegetation also lowers wind speed near the ground, the effect being especially dramatic in areas with virtually no topographic relief as in the Dorchester Swamp. The result is higher air temperatures during the winter than for more exposed areas. Understory and ground cover vegetation benefit from this by allowing for a slightly earlier start to the growing season in the spring. The canopy vegetation also provides a measure of frost protection to the lower-growing plants and can appreciably lengthen the growing season into the late fall for some species.

(e) History:

Settlement of North Dorchester Township began in the early nineteenth century. Many of the pioneers acquired their land through the agency of Colonel Thomas Talbot. All of the most desirable land was soon cleared for crop production. The upland forests of sugar maple, American beech and white pine were the first to be cut and ultimately only areas of non-arable land remained. These usually were the wetlands (Ross, 1967).

The Dorchester Swamp A.N.S.I. is the largest wetland area within the township, and although it escaped the initial land clearing activities, it has experienced other disturbing influences since. Over the years it has been a source of cedar posts for farm fences and timber to supply local saw mills. More recently approximately 80 ha (ca. 200 acres) of the swamp was cleared during the construction of provincial highways 73 and 401 and for the hydro line corridor. Occasional attempts are still being made to convert areas near the margin of the swamp to agricultural or other uses by clearing the land and constructing drainage ditches to lower the water table. Most of these schemes have been unsuccessful and some of the sites affected have either been abandoned to natural regeneration or reforested.

CHAPTER 2: METHODS

A study approach was devised to meet the objectives as stated in the Terms of Reference developed by the Ministry of Natural Resources for the study of Areas of Natural and Scientific Interest. These objectiver are as follows:

1. To conduct a detailed inventory of the vegetation of the A.N.S.I. to provide baseline data on species composition, community structure, and significant vegetative features;

2. To summarize, and where possible to supplement current knowledge of the fauna of the A.N.S.I.; and

3. To provide, using ecological criteria, reasoned evaluations, recommendations and opinions on how well the vegetation - landform features of the site district are represented.

The methods used in this study have been presented within the framework of pre-field, field, and post-field work stages.

Pre-field work involved a preliminary investigation of the site using aerial photo interpretation of 1:5000 scale photos and the 1:25,000 scale topographic maps to determine site conditions and to establish tentative boundaries for the major vegetation types or habitats. Photocopies were made of the aerial photographs to serve as field maps upon which site-specific information could be permanently recorded.

These were used in the field in conjunction with the photograph to record information so that the photo itself would not be used for this purpose. Maps and photographs used are listed in the map reference section of this report. A field itinerary was then planned for a reconnaissance survey to include all vegetation types delineated. Permission to enter upon the private lands involved was obtained by the Ministry of Natural Resources at this stage. A literature search was also initiated to provide additional information about the area and in particular to determine if other records of flora and fauna existed for the study site.

The field work itself involved the on-site collection of both qualitative and quantitative data. Qualitative information was acquired using a general reconnaissance inventory approach to describe the area in terms of the vegetation patterns, community composition and structure, and the abiotic factors associated with same. Verification of the tentative boundaries for the vegetation types was also achieved and any necessary changes were made. At the same time, all vascular plant species encountered were recorded. Those species not easily determined in the field were collected and pressed for later identification. Confirmation of identifications was sought from experts in various plant families or genera whenever specific determinations proved especially difficult. Most voucher specimens were deposited in the herbarium at the Erindale Campus of the University of Toronto. Colour slides were taken of various habitat types and of individual plant species, especially when the apparent rarity of the latter would forbid collection. In addition, all vertebrate fauna encountered or evidence, as well as some invertebrates, were recorded. Breeding evidence of birds was also noted. Fifteen days were used for this qualitative work and were distributed from early May to mid-October to allow for

adequate seasonal coverage. Actual field dates were: May 6, 7, 8, 9, 10; June 3, 5, 14, 26; August 6, 19; September 3, 6, 13; October 14.

Four days (July 9, 10, 11; August 12) were used to collect quantitative data about the vegetation of the site. Point-quarter sampling was done in two hardwood-conifer swamp stands which were considered to be of both an adequate size and a homogeneous enough composition to warrant treatment as a single unit. This decision was based on a prior reconnaissance survey of the area but nevertheless involved a rather subjective element, particularly in the assessment of homogeneity. A straight-line transect was drawn on the field map (copy of aerial photo) well within the boundaries of each stand. The compass bearing of the line was then determined from the map and used to establish the transect location in the field. Spacing of the sample points was determined by dividing the total transect length by 20, the number of points recommended in the Terms of Reference. The only constraint was that consecutive sample points were not to be so close that the same tree or sapling would be measured twice. Because of the assumption of homogeneity for the area being sampled, no maximum limit was placed on the spacing of sample points. A 10 metre length of rope was used for measuring distances along the transect line. When measuring to the next sample point, the rope was laid on the ground over the final 10 metre section to have been measured. The actual sample point was then determined as the spot where the middle point of the rope lay. This procedure avoided bias in the point selection while providing the rope as an axis for alignment of the quadrat sticks. Actual transect locations, bearing and spacing of sample points along each, were recorded to allow for resampling the same area should the need arise.

The point-quarter method is known as a plotless sampling technique because a standard size plot is not laid out at each sample point. For this study, a pair of quadrat sticks, each one metre in length, was laid on the ground at right angles to each other with one stick oriented along the transect line, and with their middle points intersecting at the sample point. Thus, four quadrants were defined about each point. In each quadrant the distances from the point to the nearest tree and sapling were recorded as well as the diameters at breast height (DBH) and the species name in each case. A tape, which was calibrated to allow a circumference measurement to be read directly as a DBH, was used for diameter measurements. Trees were defined as those individuals with a stem exceeding 10 cm in diameter at breast height and saplings as those with a diameter from 2.5 to 10 cm at breast height.

Those herbaceous species and tree seedlings present in the lower forest stratum were sampled within a one metre square quadrat that was established at every second sample point in the right-front quadrant relative to the transect line and the direction of travel along it. Thus, the lower-left corner of the quadrat would be the sample point itself. All species present were recorded and an estimate of cover for each was made using a score from 1 to 10 (cover value).

This number referred to the number of tenths of the total quadrat area covered by a downward projection of all individuals of that particular species within the quadrat. The presence of a species guaranteed that it would receive a value of at least 1 even though it covered much less than one-tenth of the area. In cases where plants overlapped one another, the resultant cover value for all species within the quadrat was in excess of the amount of ground actually shaded by those plants. Soil type and surface pH were also recorded

for each quadrat. The pH was measured using an electronic Taylor pH Soil Tester.

Importance values were calculated for all species of trees and shrubs recorded during the point-quarter and modified point-quarter sampling, as were the significance values for all species present within the quadrats, according to the following formulae (Cottam and Curtis, 1956):

Importance Value = Relative Frequency + Relative Density + Relative Dominance

where,

$$\text{Relative Frequency} = \frac{\text{number of sample points of occurrence of a species}}{\text{total number of sample points of occurrence of all species}} \times 100$$

$$\text{Relative Density} = \frac{\text{number of stems of a species measured}}{\text{total number of stems of all species measured}} \times 100$$

$$\text{Relative Dominance} = \frac{\text{total basal area of all stems of a species}}{\text{total basal area of all stems of all species}} \times 100$$

Significance Value = Relative Frequency + Relative Cover

where,

Relative Frequency was calculated as above, except that "quadrats" was substituted for "sample points", and

$$\text{Relative Cover} = \frac{\text{total cover for a species}}{\text{total cover for all species}} \times 100$$

Importance and significance values were used to provide a better, overall impression of the importance (significance) of a species than would be gained by using only one of the component parameters by itself.

In addition, relative importance values have been calculated for the tree species in some communities sampled by Small and McBurney (1977). They used 200 square metre quadrats and provided relative density and

relative dominance figures for each species present but did no further calculations. These two figures were added, the sum divided by twenty and the result rounded to the nearest quarter (0.25) to arrive at a relative dominance value for a particular species. Thus, the total of all relative dominance values for the tree species within the quadrat is equal to ten.

Post-field work consisted of many tasks. These included the pressing, identification and subsequent verification and deposition in a recognized herbarium of collected plant specimens, additional literature research, the compilation of data to produce tables, figures and species lists, further calculations involving the quantitative data, and the summary of both quantitative and qualitative information to formulate final community descriptions. Mapping of vegetation types, the most representative communities, and rare vascular plant locations, was done on a 1:5,000 scale base map. Rare vascular plant information sheets were prepared for the Regional Rare Vascular Plants Atlas programme.

CHAPTER 3: VEGETATION AND FLORISTICS

(i) INTRODUCTION

The naturally-occurring vegetation of the Dorchester Swamp A.N.S.I. falls within the two broad landform categories of uplands and lowlands. These occupy approximately 14% and 76% of the total area respectively. Anthropogenic vegetation accounts for the remaining 10% and consists of a few small conifer plantations and the highway rights-of-way.

Twelve community types or community complexes have been identified within the area. Two occur in the uplands, seven in the lowlands and three are anthropogenic. Of the nine naturally-occurring types, four are classified as swamp communities according to Jeglum et al. (1974) and O.M.N.R. (1984). Within these four communities, a total of thirteen sub-types or associations has been named. It is these four communities which contribute most to the representation of the A.N.S.I., together covering more than 75% of the area. The five remaining naturally-occurring communities (two upland forest types, cat-tail marsh, low shrub-herb and pond communities) made a lesser contribution as common associates of the major swamp types.

Generally speaking, the A.N.S.I. consists of a rectangular core of lowland swamp cut into four quadrants by the two intersecting highways, plus a few scattered areas of upland forest on slightly higher elevations within the swamp itself or on the periphery. The various plant communities present are the biological response to changes in the soil and moisture regime within the study site. Mesic conditions generally prevail on the well-drained sandy loam of the uplands while the moisture content of the soil increases toward the

lower elevations of the swamp where wet to saturated conditions may be found.

All community types that have been identified are described in detail in the following section and summarized in Table 2a. The species composition of the nine naturally-occurring communities is presented in Table 2b. The location and distribution of each are shown in Figure 3 at a scale of 1:5000. In most cases the delineation of one community from another does not denote any abrupt change in composition of the vegetation, but rather represents a band of vegetation on both sides of the line where a gradual transition occurs from one type to the other. Abrupt changes can be found, however, where forested areas border roads, fields, meadows or cultivated areas.

The interrelationships between the various communities and the three abiotic parameters of temperature, substrate and moisture regime are portrayed in matrix form in Figure 4 (Maycock, 1979).

(ii) COMMUNITY DESCRIPTIONS

I UPLANDS

1 DECIDUOUS FOREST: sugar maple (Acer saccharum) - black cherry (Prunus serotina) community

A) Site:

location within A.N.S.I. - parts of north-east and south-east quadrants (Figure 3)

topography - flat to gently sloping with some hummocks

soil - well-drained, sandy loam

moisture regime - mesic

microclimate - normal (Figure 4)

area - 31.3 ha (77.5 acres)

percentage of A.N.S.I. - 5.7

B) Structure:

overstory - 75 to 100% canopy closure

understory - sparse to dense; 25 - 100% cover

ground cover - sparse and patchy with some tree seedlings and spring ephemerals

tree age and size - mostly young and small, ca. 15 cm (6 in.) DBH
- a few up to ca. 45 cm (18 in.) DBH

successional stage - mid (1b) to climax (1a)

C) Disturbance:

- some tree thinning has occurred leaving openings in the canopy
- more extensive clearing has taken place in the past in association 1b judging by the number of rotting stumps, the present dominance of trembling aspen and the dense shrub patches (raspberries and blackberries) where the canopy is more open.

D) Significant Features: none

E) Composition:

component associations - 1a, 1b (see Table 2a)

dominant species for each association - see Table 2b

additional species present - see Appendix A, "communities of occurrence" column

2 MIXED FOREST: hemlock (Tsuga canadensis) - sugar maple (Acer saccharum) - yellow birch (Betula alleghaniensis) - red maple (Acer rubrum) - white pine (Pinus strobus) - white cedar (Thuja occidentalis) - blue beech (Carpinus caroliniana) - black cherry (Prunus serotina) - white ash (Fraxinus americana) - community (Photos L7, L8, Appendix J)

A) Site:

location within A.N.S.I. - portion of all four quadrants (Figure 3)

topography - flat to slightly undulating and hummocky

soil - sandy loam with good to fair drainage on ridges and in hollows respectively

moisture regime - mesic to wet-mesic

microclimate - mostly normal except for association 2e which is colder than normal (Figure 4)

area - 43.3 ha (107.1 acres)

percentage of A.N.S.I. - 7.9

B) Structure:

overstory - 75 to 100% canopy closure

understory - sparse; usually <25% cover

ground cover - sparse but with patches of spring ephemerals and good regeneration of tree species

tree age and size - a good range of tree sizes with some American beech up to 1 m (39 in.) in diameter, indicative of a mature forest

successional stage - in a climax condition with some dead or dying trees present

C) Disturbance:

- evidence of logging (old stumps) throughout
- archery target shooting course present in association 2a (Photos L39, L40, Appendix J)
- snowmobile trail through associations 2b and 2c

D) Significant Features:

- one significant plant species is present, the provincially and nationally rare horsebalm (Collinsonia canadensis) in association 2a

E) Composition:

component associations - 2a, 2b, 2c, 2d, 2e (see Table 2a)

dominant species for each association - see Table 2b

additional species present - see Appendix A, "communities of occurrence" column

II LOWLANDS (WETLANDS)

3 HARDWOOD-CONIFER (MIXED) SWAMP: black ash (Fraxinus nigra) (42) - white cedar (Thuja occidentalis) (42) - red maple (Acer rubrum) (41) - yellow birch (Betula alleghaniensis) (40) - trembling aspen (Populus tremuloides) (24) - white pine (Pinus strobus) (21) - white elm (Ulmus americana) (20) community (Table 8, Appendix E)

A) Site:

location within A.N.S.I. - parts of north-east, north-west and south-west quadrants (Figure 3)

topography - flat with scattered hummocks and occasional rises with intervening hollows

soil - poorly drained muck

moisture regime - wet-mesic to wet with frequent pools of standing water in depressions

microclimate - colder than normal (Figure 4)

area - 256.1 ha (632.6 acres)

percentage of A.N.S.I. - 46.7

B) Structure:

overstory - usually 100% canopy closure but broken regularly where windthrows and dying trees (often white elm) occur

understory - 25 - 75% cover usually restricted to the ridges and hummocks; good white cedar regeneration

ground cover - dense patches of ferns and other herbs occur but are usually limited by the presence of standing water

tree age and size - relatively young trees averaging 15 cm (6 in.) DBH with occasional specimens of black ash and red maple with a DBH of 40 cm (16 in.)

successional stage - climax state but altered by selective timber harvesting

C) Disturbance:

- evidence of timber harvesting throughout
- snowmobile trail through associations 3a and 3c
- some evidence of fire (charred stumps) in association 3a

D) Significant Features:

- this is a highly representative community (see discussion in chapter 5)
- contains 11 significant plant species, almost one-quarter of the 46 identified within the A.N.S.I.

E) Composition:

component associations - 3a, 3b, 3c (see Table 2a)

dominant species for each association - see Table 2b

additional species present - see Appendix A , "communities of occurrence" column

4 CONIFER-HARDWOOD (MIXED) SWAMP: white cedar (Thuja occidentalis) - yellow birch (Betula alleghaniensis) - hemlock (Tsuga canadensis) - red maple (Acer rubrum) - tamarack (Larix laricina) - black ash (Fraxinus nigra) community

A) Site:

location within A.N.S.I. - small portions of the north-east, north-west and south-west quadrants (Figure 3)

topography - flat with hummocky sections

soil - poorly drained muck

moisture regime - wet-mesic to wet with frequent pools of standing water and some smaller streams

microclimate - colder than normal (Figure 4)

area - 24.6 ha (60.8 acres)

percentage of A.N.S.I. - 4.5

B) Structure:

overstory - up to 100% canopy closure except where frequently broken by deadfalls and occasional windthrows

understory - sparse, with shrubs and saplings usually occurring on hummocks; light levels rather low because of dense canopy

ground cover - dominated by fern species with cover varying from sparse to dense and with

the distribution pattern influenced mainly by the presence of standing water

tree age and size - young to intermediate aged with an average DBH of 15 cm (6 in.); some white cedars with a 25 cm (10 in.) DBH

successional stage - climax state but somewhat altered by timber cutting

C) Disturbance:

- evidence of timber harvesting
- snowmobile trail through association 4c

D) Significant Features:

- this is a highly representative community (see discussion in Chapter 5)
- the significant plant species, smooth-sheathed sedge (Carex laevivaginata), is present in association 4b, while woodland horsetail (Equisetum sylvaticum) occurs in association 4c

E) Composition:

component associations - 4a, 4b, 4c (see Table 2a)

dominant species for each association - see Table 2b

additional species present - see Appendix A, "communities of occurrence" column

5 HARDWOOD SWAMP: silver maple (Acer saccharinum) - red maple (Acer rubrum) - black ash (Fraxinus nigra) - white elm (Ulmus americana) - yellow birch (Betula alleghaniensis) - poplar (Populus spp.) - willow (Salix spp.) community (Photos L1, L2, and L3, Appendix J)

A) Site:

location within A.N.S.I. - portions of the north-west, north-east and south-east quadrants (Figure 3)

topography - flat, interspersed with hummocks and wet depressions

soil - poorly drained muck

moisture regime - wet with some pools of standing water

microclimate - normal in associations 5a and 5c, warmer than normal and cooler than normal conditions in association 5b and associations 5d and 5e respectively (Figure 4)

area - 89.2 ha (220.4 acres)

percentage of A.N.S.I. - 16.3

B) Structure:

overstory - 100% canopy closure except where opened by deadfalls and windthrows

understory - 25 to 75% cover with shrubs and saplings mainly restricted to the hummocks and rises

ground cover - sparse and also restricted to the hummocks except for occasional dense patches where openings in the canopy occur

tree age and size - mostly small, young trees averaging 15 cm (6 in.) DBH, with an occasional silver maple or cottonwood ranging up to 42 cm (17 in.) DBH

successional stage - in climax state with good regeneration of dominant canopy species but altered by some timber harvesting

C) Disturbance:

- evidence of timber harvesting
- snowmobile trail through parts of associations 5b and 5d
- cattle grazing in part of association 5e
- some evidence of fire (charred stumps) in association 5b

D) Significant Features:

- as with the previous two swamp communities, this is a highly representative community for this A.N.S.I. (see discussion in Chapter 5)

- a recently established heronry of the Great Blue Heron occurs in association 5b, but outside the boundary of the A.N.S.I. in the extreme north-eastern corner of the swamp (Figure 3 and Appendix G)

E) Composition:

component associations - 5a, 5b, 5c, 5d, 5e (see Table 2a)

dominant species for each association - see Table 2b

additional species present - see Appendix A, "communities of occurrence" column

6 TALL SHRUB (THICKET) SWAMP: dogwood (Cornus spp.) - willow (Salix spp.) community. Photos L4, L5, L9 and L10, Appendix J)

A) Site:

location within A.N.S.I. - portions of the north-west, south-west and south-east quadrants (Figure 3)

topography - generally flat but with hummocks and wet depressions interspersed throughout

soil - poorly drained muck

moisture regime - very wet with some standing water, especially in the numerous potholes created by windthrows

B) Structure:

trees - sparse with less than 10% cover; blowdowns are common throughout because of the greater exposure to winds than in the more densely forested areas; some dead or dying trees are scattered throughout providing good nesting sites for cavity nesting birds such as tree swallows and house wrens

shrubs - 50 to 100% cover; the dominant vegetation in this community

ground cover - patchy but dense in places, with a very evident vertical zonation of species according to their moisture tolerance ranging from the wet, muddy depressions to the drier hummock tops

successional stage - appears to be in a climax stage limited by the present very wet conditions; in some areas where most trees are either dead or dying from flooding, this community type may have resulted from altered drainage of the site when the two major highways were constructed.

C) Disturbance:

- flooding in some areas perhaps related to highway construction
- some evidence of fire observed in the north-west quadrant (charred stumps)

D) Significant Features:

- this too is a highly representative community (see discussion in Chapter 5)
- eight significant vascular plants occur in association 6a while only one is present in association 6b

E) Composition:

component associations - 6a, 6b (see Table 2a)

dominant species for each association - see Table 2b

additional species present - see Appendix A, "communities of occurrence" column

7 CAT-TAIL MARSH: cat-tail (Typha spp.) community (Photo L14, Appendix J)

A) Site:

location within A.N.S.I. - eastern edge of north-east quadrant (Figure 3)

topography - flat with a few hummocks

soil - poorly drained muck

moisture regime - saturated throughout the year

microclimate - colder than normal (Figure 4)

area - 0.8 ha (1.9 acres); an additional 7.7 ha (19.1 acres) contiguous with the former area but outside the A.N.S.I. boundary

percentage of A.N.S.I. - 0.2

B) Structure:

- dominated by cat-tail patches affording up to 100% ground cover and interspersed with small areas of standing water supporting some floating aquatic macrophytes such as duckweeds (Lemna spp.) and water-meal (Wolffia spp.) and emergents such as arrow-head (Sagittaria latifolia) and water-plantain (Alisma plantago-aquatica); a few shrubs may be found scattered throughout on hummocks or where slightly drier conditions prevail near the margin; red-osier dogwood (Cornus stolonifera) and narrow-leaved meadowsweet (Spiraea alba) are the most common shrubs

C) Disturbance:

- none apparent

D) Significant Features:

- although not a highly representative community type for this A.N.S.I., it is another wetland type commonly associated with swamps

- contains two significant vascular plant species, albeit in that portion of the marsh external to the A.N.S.I.

E) Composition:

component associations - none

dominant species - see Table 2b

additional species present - see Appendix A "communities of occurrence" column

8 LOW SHRUB - HERB COMMUNITY: black huckleberry (Gaylussacia baccata) - sedge (Carex spp.) - large cranberry (Vaccinium macrocarpon) - moss (Sphagnum sp.) community (Photo L11, Appendix J)

A) Site:

location within A.N.S.I. - a narrow band adjacent to pond margin at western edge of the south-east quadrant

topography - hummocky

soil - peaty muck

moisture regime - very wet to saturated; the former condition usually prevails on Sphagnum - covered hummocks but there is some surface drying during the summer months

microclimate - normal to colder than normal

(Figure 4)

area - 0.8 ha (2.0 acres)

percentage of A.N.S.I. - 0.2

B) Structure:

- dominated by a mixture of low ericaceous shrubs and herbs on a Sphagnum hummock base; ground cover is 100%

C) Disturbance:

- none apparent

D) Significant Features:

- like the marsh, another wetland type associated with swamps occasionally; perhaps a more unique than common association thus lending greater significance to its presence here
- contains five significant vascular plants as well as several uncommon ones such as round-leaved sundew (Drosera rotundifolia), pitcher-plant (Sarracenia purpurea) (Photo L31, Appendix J) and grass-pink orchid (Calopogon tuberosus) (Photo L16, Appendix J), which are typical species of more northern bog or fen wetland types; neither of these designations is appropriate however for the very small restricted area involved here

E) Composition:

component associations - none

dominant species - see Table 2b

additional species present - see Appendix A,
"communities of occurrence" column

9 POND VEGETATION: yellow pond lily (Nuphar variegatum) - variable pondweed (Potamogeton gramineus) community (Photo L11, L12, Appendix J)

A) Site:

location within A.N.S.I. - in pond at western edge of south-east quadrant

topography - the pond is probably of kettle origin since the A.N.S.I. site is closely associated with the Ingersoll Moraine of the Mount Elgin Ridges

soil - muck bottom

moisture regime - open water of pond

microclimate - normal (Figure 4)

area of pond - 0.7 ha (1.7 acres)

percentage of A.N.S.I. - 0.2

B) Structure:

- floating aquatic macrophytes dominated by yellow pond lilies with some variable pondweed present as well

C) Disturbance:

- none apparent

D) Significant Features:

- see first comment under this heading for community 8

NOTE: an additional small dugout pond occurs at the western border of the north-west quadrant but consists only of open water (Figure 3)

III ANTHROPOGENIC

10 PLANTATION: conifer and conifer-hardwood communities

A) Site:

location within A.N.S.I. - parts of the north-east, north-west and south-west quadrants (Figure 3)

topography - flat to gently sloping uplands

soil - well-drained sandy loam

moisture regime - mesic to dry-mesic

microclimate - normal

area - 4.9 ha (12.1 acres) are within the A.N.S.I. and 8.7 ha (21.4 acres) are outside

percentage of A.N.S.I. - 0.9

a) red pine (Pinus resinosa) - white pine (Pinus strobus) - scotch pine (Pinus sylvestris) community

B) Structure:

overstory - mostly closed canopy except where thinning has recently occurred

understory - virtually no shrub/sapling layer

ground cover - sparse to non-existent herb layer but a thick needle-duff carpets the ground

tree age and size - an even-aged stand of intermediate age with some trees exceeding 30 cm (12 in.) DBH

- the three separate stands at the eastern edge of the south-west quadrant (Figure 3) are known collectively as the Banks Tract and form a part of the Middlesex County Forest
- a small stand of similar composition occurs at the western edge of the north-west quadrant (Figure 3)

b) white pine (Pinus strobus) - white spruce (Picea glauca) - Norway spruce (Picea abies) - European larch (Larix decidua) community

B) Structure:

- similar to community 10a except that the two stands are of younger age and the trees are smaller in size

- one stand is within the A.N.S.I. and the other is outside at the eastern end of the north-east quadrant of the swamp (Figure 3); both are on land owned by the Upper Thames River Conservation Authority and are managed as part of an Agreement Forest with the assistance of the Ontario Ministry of Natural Resources (O'Neill, pers. comm. 1986)

c) white pine (Pinus strobus) - black walnut (Juglans nigra) - European larch (Larix decidua) community

B) Structure:

- this too is a relatively young stand that borders Highway 401 just outside the A.N.S.I. boundary at the eastern end of the north-east quadrant, between the two stands of community 10b; it is also under the ownership of the Upper Thames River Conservation Authority and falls within the Agreement Forest

11 HIGHWAY RIGHTS-OF-WAY: community complexes
(Photo L13, Appendix J)

A) Site:

location within A.N.S.I. - Highway 401 bisects the area in an east-west direction while Highway 73 does so running north and south; each consists of

a straight, relatively narrow strip of land except at their point of intersection where a cloverleaf has been constructed to form an oval piece of land approximately 20 ha (50 acres) in size (Figure 3)

topography - flat to sloping from the more elevated paved portions of the highways to the roadside ditches

soil - varies from the sandy loam of the cloverleaf area to the gravel and muck of the road shoulders and ditches

moisture regime - varies from dry-mesic to wet-mesic in the cloverleaf area and from dry to very wet along the road shoulders and ditches respectively

microclimate - normal

area - 52 ha (128.5 acres) including paved surfaces

percentage of A.N.S.I. - 9.5

B) Structure:

overstory - non-existent

shrub/sapling layer - a few scattered shrubs may be found along the roadsides usually as raspberry (Rubus spp.) patches but there are none in the cloverleaf area

ground cover - mainly consists of herbaceous graminoid and weedy alien species

C) Disturbance:

- these are highly disturbed sites created in conjunction with road construction and maintained as such by regular mowing to control vegetation growth
- the transportation corridors have provided access to the site, a controlled environment and the means whereby the seed of alien plant species may be introduced
- winter salting of the highways has resulted in the presence of many salt-loving vascular plants (halophytes) along the road verges (Catling and McKay, 1980, 1981) and especially in the cloverleaf area where the salt tends to become more concentrated.

D) Significant Features:

- not a representative community type
- fourteen significant vascular plants occur, with twelve of these being present in the cloverleaf area

E) Composition:

- no definite patterns are apparent but several halophytic species have formed solid patches as the dominant ground cover in some areas

where more saline conditions exist. The Baltic rush (Juncus balticus) and the very slender sedge (Carex praegracilis) exhibit this colonizing habit which is readily seen in the northern half of the cloverleaf area. The latter species is a recent adventive in Southern Ontario along Highway 401 (Reznicek et al., 1976; Brunton and Catling, 1982) and its presence here constitutes a new record for Middlesex County.

- additional species are listed in Appendix A in the "communities of occurrence" column

l2 HYDRO LINE CORRIDOR: community complex

(Photos L14, L15, Appendix J)

A) Site:

location relative to A.N.S.I. - the entire complex is outside the A.N.S.I. but is adjacent to it as a long narrow strip along the whole of its southern boundary (Figure 3)

topography - flat to slightly undulating

soils - slightly acid (6.5pH) loam and muck

moisture regime - varies from dry-mesic (seasonally) on the loam to very wet in the muck soils

microclimate - normal

area - 20.1 ha (49.5 acres)

B) Structure:

overstory - non-existent

shrub/sapling layer - shrub patches occur sporadically throughout with sumacs (Rhus spp.) and raspberries (Rubus spp.) favouring the drier areas and willows (Salix spp.) and dogwoods (Cornus spp.) on the wetter sites. Although they may be dominant where they occur, their coverage of the overall area is no more than approximately 10% because of the vegetation control program used by Ontario Hydro along the corridor

ground cover - 75 to 100%; a mozaic of both alien and native herbaceous vascular plants reflecting the highly variable abiotic conditions along the corridor. Cat-tails (Typha spp.) occur in isolated patches in the wetter spots throughout, tall herbs such as goldenrods (Solidago spp.) and asters (Aster spp.) typical of old field vegetation form dense patches in many places, while the higher and drier sandy sites support a sparser and shorter herbaceous vegetation as well as some

Table 2a: Vegetation Classification Summary for the Dorchester Swamp A.N.S.I.

I UPLANDS

1 DECIDUOUS FOREST: sugar maple - black cherry community on mesic sandy loam

a sugar maple (Acer saccharum) (5) - black cherry (Prunus serotina) (2) - basswood (Tilia americana) (2) - white ash (Fraxinus americana) (0.5) - American beech (Fagus grandifolia) (0.5) association on mesic sandy loam

b trembling aspen (Populus tremuloides) - black cherry (Prunus serotina) - sugar maple (Acer saccharum) - blue beech (Carpinus caroliniana) - witch-hazel (Hamamelis virginiana) successional association on mesic sandy loam

2 MIXED FOREST: hemlock - yellow birch - sugar maple - blue beech - white ash - red maple - white pine - white cedar community on mesic to wet-mesic sandy loam.

a hemlock (Tsuga canadensis) (4.5) - sugar maple (Acer saccharum) (4.0) - black cherry (Prunus serotina) (1.0) - yellow birch (Betula alleghaniensis) (0.5) association on mesic sandy loam (Photos L7, 8, Appendix J)

b hemlock (Tsuga canadensis) (3.25) - blue beech (Carpinus caroliniana) (3.0) - white pine (Pinus strobus) (1.5) - white oak (Quercus alba) (1.25) - red maple (Acer rubrum) (0.75) - white ash (Fraxinus americana) (0.25) association on mesic to wet-mesic sandy loam

c hemlock (Tsuga canadensis) (7.0) - sugar maple (Acer saccharum) (2.0) - silver maple (Acer saccharinum) (0.5) - American beech (Fagus grandifolia) (0.25) - white ash (Fraxinus americana) (0.25) - red maple (Acer rubrum) - black cherry (Prunus serotina) association on mesic sandy loam

d hemlock (Tsuga canadensis) (4.5) - yellow birch (Betula alleghaniensis) (2.5) - red maple (Acer rubrum) (1.5) - basswood (Tilia americana) (1.0) - black ash (Fraxinus nigra) (0.5) - white ash (Fraxinus americana) (0.5) association on mesic to wet-mesic sandy loam

e white cedar (Thuja occidentalis) (4.0) - yellow birch (Betula alleghaniensis) (2.5) - blue beech (carpinus caroliniana) (1.0) - black cherry (Prunus serotina) (1.0) - trembling aspen (Populus tremuloides) (0.5) - white pine (Pinus strobus) (0.5) - white ash (Fraxinus americana) (0.5) association on mesic to wet-mesic sandy loam

II LOWLANDS (WETLANDS)

3 HARDWOOD - CONIFER (MIXED) SWAMP: black ash (Fraxinus nigra) (42) - white cedar (Thuja occidentalis) (42) - red maple (Acer rubrum) (41) - yellow birch (Betula alleghaniensis) (40) - trembling aspen (Populus tremuloides) (24) - white pine (Pinus strobus) (21) - white elm (Ulmus americana) (20) community on wet-mesic to wet muck soil (combined results of associations 3a and 3b as given in Table 8, Appendix E)

a yellow birch (Betula alleghaniensis) (57) - red maple (Acer rubrum) (46) - white cedar (Thuja occidentalis) (45) - trembling aspen (Populus tremuloides) (45) - white pine (Pinus strobus) (31) - white elm (Ulmus americana) (15) - silver maple (Acer saccharinum) (15) association on wet muck soil (Table 9a, Appendix E)

b black ash (Fraxinus nigra) (87) - white cedar (Thuja occidentalis) (38) - red maple (Acer rubrum) (36) - white elm (Ulmus americana) (27) - black cherry (Prunus serotina) (21) - yellow birch (Betula alleghaniensis) (21) - tamarack (Larix laricina) (18) - hemlock (Tsuga canadensis) (17) association on wet-mesic to wet muck soil (Table 10a, Appendix E) (Photo L6, Appendix J)

c yellow birch (Betula alleghaniensis) (2.75) - silver maple (Acer saccharinum) (2.75) - black ash (Fraxinus nigra) (2.0) - red maple (Acer rubrum) (1.25) - basswood (Tilia americana) (0.5) - white cedar (Thuja occidentalis) (0.25) - white elm (Ulmus americana) (0.25) - hemlock (Tsuga canadensis) (0.25) association on wet muck soil

4 CONIFER - HARDWOOD (MIXED) SWAMP: white cedar - yellow birch-hemlock - red maple - tamarack - black ash community on wet-mesic to wet muck soil

a white cedar (Thuja occidentalis) (4.5) - yellow birch (Betula alleghaniensis) (4.0) - black ash (Fraxinus nigra) (0.75) - hemlock (Tsuga canadensis) (0.25) - red maple (Acer rubrum) (0.25) - tamarack (Larix laricina) (0.25) - white pine (Pinus strobus) association on wet muck soil

b white cedar (Thuja occidentalis) (4.5) - tamarack (Larix laricina) (2.0) - trembling aspen (Populus tremuloides) (1.0) - hemlock (Tsuga canadensis) (1.0) - red maple (Acer rubrum) (0.5) - black ash (Fraxinus nigra) (0.5) - yellow birch (Betula alleghaniensis) (0.5) association on wet-mesic to wet muck soil

c white cedar (Thuja occidentalis) (3.25) - hemlock (Tsuga canadensis) (2.5) - red maple (Acer rubrum) (2.25) - yellow birch (Betula alleghaniensis) (1.5) - white elm (Ulmus americana) (0.25) - black ash (Fraxinus nigra) (0.25) association on wet muck soil

5 HARDWOOD SWAMP: silver maple - red maple - black ash - white elm - yellow birch - poplar - willow community on wet muck soil

a silver maple (Acer saccharinum) (8) - red maple (Acer rubrum) (1) - yellow birch (Betula alleghaniensis) (1) association on wet muck soil

b silver maple (Acer saccharinum) (4.5) - cottonwood (Populus deltoides) (2.0) - white ash (Fraxinus americana) (1.0) - black ash (Fraxinus nigra) (1.0) - white elm (Ulmus americana) (1.0) - red maple (Acer rubrum) (0.5) association on wet muck soil (Photo L3, Appendix J)

c silver maple (Acer saccharinum) (5) - willow (Salix spp.) (5) association on wet muck soil

d red maple (Acer rubrum) (4) - yellow birch (Betula alleghaniensis) (3) - white elm (Ulmus americana) (1) - silver maple (Acer saccharinum) (1) - black ash (Fraxinus nigra) (1) association on wet muck soil (Photo L1, Appendix J)

e trembling aspen (Populus tremuloides) (3) - red maple (Acer rubrum) (2) - silver maple (Acer saccharinum) (1) - blue beech (Carpinus caroliniana) (1) - balsam poplar (Populus balsamifera) (1) - black ash (Fraxinus nigra) (1) - white elm (Ulmus americana) (1) association on wet muck soil (Photo L2, Appendix J)

6 TALL SHRUB (THICKET) SWAMP: dogwood - willow community on very wet muck soil

a dogwood (Cornus spp.) - willow (Salix spp.) - winterberry (Ilex verticillata) - mountain-holly (Nemopanthus mucronata) - blueberry (Vaccinium spp.) association on very wet muck soil (Photos L9, L10, Appendix J)

b willow (Salix spp.) - dogwood (Cornus spp.) white cedar (Thuja occidentalis) - common elderberry (Sambucus canadensis) - high-bush cranberry (Viburnum trilobum) - nannyberry (Viburnum lentago) - alder-leaved buckthorn (Rhamnus alnifolia) association on very wet muck soil (Photos L4, L5, Appendix J)

7 CAT-TAIL (Typha spp.) MARSH: on very wet to saturated muck soil (Photo L14, Appendix J)

8 LOW SHRUB - HERB COMMUNITY: black huckleberry (Gaylussacia baccata) - climbing nightshade (Solanum dulcamara) - sedge (Carex spp.) - large cranberry (Vaccinium macrocarpon) - moss (Sphagnum sp.) on very wet to saturated peaty muck soil at pond margin (Photo L11, Appendix J)

9 POND VEGETATION: yellow pond lily (Nuphar variegatum) - variable pondweed (Potamogeton gramineus) floating aquatic macrophyte community (Photo L11, L12, Appendix J)

OW - unvegetated open water (Photo L11, Appendix J) - not a community or association but included here for completeness to indicate the nature of the remaining area

III ANTHROPOGENIC

10 PLANTATION: conifer and conifer-hardwood communities

a red pine (Pinus resinosa) - white pine (Pinus strobus) - scotch pine (Pinus sylvestris) community on dry-mesic sandy loam

b white pine (Pinus strobus) - white spruce (Picea glauca) - Norway spruce (Picea abies) - European larch (Larix decidua) community on dry-mesic to mesic sandy loam

c white pine (Pinus strobus) - black walnut (Juglans nigra) - European larch (Larix decidua) community on dry-mesic to mesic sandy loam

11 HIGHWAY RIGHTS-OF-WAY:

a graminoid - weedy alien community complex on dry-mesic to wet-mesic sandy loam of cloverleaf area (Photo L13, Appendix J)

b graminoid - weedy alien community complex on dry to very wet sandy loam, gravel fill or muck soils of roadsides

12 HYDRO LINE CORRIDOR: community complex on dry-mesic to very wet sandy loam or muck soils (Photos L14, L15, Appendix J)

Table 2b: Species composition of the naturally-occurring plant communities and associations within the Dorchester Swamp A.N.S.I.

species \ community/association	1			2				3			4			5					6		7	8	9
	a	b	a	b	c	d	e	a	b	c	a	b	c	a	b	c	d	e	a	b			
OVERSTORY																							
Acer rubrum				5	6	3		2	3	4	4	5	3	2	6		1	2		X			
A. saccharinum					3			6		1				1	1	1	3	3	X	X			
A. saccharum	1	3	2		2				X								X						
Betula alleghaniensis			4			2	2	1	5	1	2	5	4	2			2			X			
Carpinus caroliniana		4		2			3		X									3					
Fagus grandifolia	4		X		4		X	X															
Fraxinus americana	4			6	4	5	5	X	X						3								
F. nigra						5		X	1	3	3	5	5		3		3	3	X	X			
Larix laricina									7		4	2			X				X				
Pinus strobus				3			5	5	X		7												
Populus balsamifera									X			X						3		X			
P. deltoides								X				X			2								
P. tremuloides		1					5	3	X			3						1	X	X			
Prunus serotina	2	2	3		6		3	X	5			X			X		X	X					
Quercus alba				4					X								X						
Salix spp.								X								1			X	X			
Thuja occidentalis							1	3	2	6	1	1	1				X	X	X	X			

Table 2b: Species composition of the naturally-occurring plant communities and associations within the Dorchester Swamp A.N.S.I.

community/association	1		2					3			4			5					6		7	8	9
species	a	b	a	b	c	d	e	a	b	c	a	b	c	a	b	c	d	e	a	b			
Tilia americana	2					4		X	X	5							X			X			
Tsuga canadensis			1	1	1	1		X	8	6	4	3	2				X						
Ulmus americana						X	X	6	4	6			5		3		3	3		X			
UNDERSTORY (Shrubs, Saplings, Vines)																							
Acer rubrum								D	X														
A. saccharum	D	X	X		X																		
A. saccharinum								D						X									
Betula alleghaniensis								D	D														
Carpinus caroliniana									D									X					
Cornus stolonifera								X	X	X					X	X	X	X	D	D	X		
Cornus spp.															D				D	D			
Fraxinus nigra								D	D														
Gaylussacia baccata																			X			X	
Hamamelis virginiana		D					D		X				X				X	X					
Ilex verticillata									X			X			X				D				
Lonicera canadensis							D			X	D				X		X						
Nemopanthus mucronata															X				D				

Table 2b: Species composition of the naturally-occurring plant communities and associations within the Dorchester Swamp A.N.S.I.

species \ community/association	1		2					3			4			5					6		7	8	9
	a	b	a	b	c	d	e	a	b	c	a	b	c	a	b	c	d	e	a	b			
Parthenocissus inserta	X		X					D	D		X	X		D						X			
Populus tremuloides								X	D														
Prunus virginiana				X					D			X			X		X			X			
Ribes americanum								D	D	D	D			D						X			
Rubus idaeus		X	X						D	D					X		X	X		D			
Salix spp.																			D	D			
Sambucus canadensis			X					X							X		X	X		D			
Thuja occidentalis							D	D	D	D	D	D	D						X	D			
Tilia americana									D														
Ulmus americana								X	D														
GROUND COVER																							
Acer rubrum seedlings						D		X	X	D		X			X								
Aster puniceus								X	D	X		X			X		X	X	X	X	X		
Betula alleghaniensis seedlings									D	D													
Bryophytes (mosses & liverworts)	X		X	X	X	X	X	D	D	D	D	D	D	X	X		X	X	X	X	X		
Carex spp.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	D	D	X	D	
Cypripedium reginae								X	X	X		D	X		X					X			
Dryopteris marginalis	X		X			X	D	X	X	X	D	X	X	D	X		X	X					
D. spinulosa	X		X		X		X	X	X	X	X	X	D	X	X		X	X					
Fagus grandifolia seedlings							D																
Fraxinus nigra seedlings						X		X	D	D	X	X											

Table 2b: Species composition of the naturally-occurring plant communities and associations within the Dorchester Swamp A.N.S.I.

community /association / species	1		2					3			4			5					6		7	8	9
	a	b	a	b	c	d	e	a	b	c	a	b	c	a	b	c	d	e	a	b			
Geranium maculatum	D		X	X	X	X									X		X	X					
Glyceria striata								X	D	X	X	X	X	X	X		X	X	X	X			
Impatiens capensis								D	D	D	D	X	X	D	D	X	X	X	X	X	X		
Nuphar variegatum																							D
Onoclea sensibilis				X			D	D	D	D	D	D	D	D	D		X	X	X	D	X		
Osmunda cinnamomea			X				D	X	X	X	D	X	D		X		X	X	X	D			
Rhus radicans	X	X	X	X			X	X	D	D	X	D	X	X	X		X	X	X	X			
Rubus pubescens								D	D	X	X	X	X		X		X	X	X	X			
Solanum dulcamara								X	X	X	X	X		D		X	X	X	X	D	X	D	
Symplocarpus foetidus							X	D	D	D	D	D	D	D	X		X	X	X	D	X		
Thelypteris palustris								X	D	X	X	X	X	X	X		X	X	X	X	X		
Tiarella cordifolia	D			X		X			X	X			X		X		X	X					
Trillium grandiflorum	X	X	X			X	D	X	X	X	X		X		X		X	X					
Typha angustifolia																					D		
T. latifolia								X							X					X	D		
Vaccinium macrocarpon																						D	

3 Refers to order of dominance of tree species
D Dominant in at least some parts of the community or association
X Present but not as a dominant; used here for completeness to show overall distribution of the dominant species (in at least one community or association) listed.
Refer to Appendix A for additional species in a given community or association.

Figure 4

Vegetation Matrix of Communities Occurring in the Dorchester Swamp A.N.S.I.

Sub-strate & Temp. \ Moisture regime		Arid	Very Dry	Dry	Dry Mesic	Mesic	Wet Mesic	Wet	Very Wet	Satur-ated	Open Water
Colder	Rock										
	Sand						2e(DE)				
	Loam					------					
	Clay										
	Organic						2e(DE) 3b(DE) 4b-----	3a,c 4a,c 5d,e	6a(DE) (DE)6b	7 8-----	
Normal	Rock										
	Sand					2a(DE) 2b------ 2c(DE)					
	Loam					1a,b(S) 2d--------					
	Clay										
	Organic							5a(DE) 5c(DE)	6a 8		9(DE)
Warmer	Rock										
	Sand										
	Loam										
	Clay										
	Organic							5c 5b	6b		

Note: Please refer to following page for definitions.

(after Maycock 1979)

LEGEND: Figure 4 Continued

		% of area
1	Upland Deciduous Forest	5.7
	a sugar maple - black cherry - basswood - white ash	
	b trembling aspen - black cherry - sugar maple blue beech - witch-hazel	
2	Upland Mixed Forest	7.9
	a hemlock - sugar maple - black cherry - yellow birch	
	b hemlock - blue beech - white pine - white oak - red maple - white ash	
	c hemlock - sugar maple - silver maple - American beech - white ash - red maple - black cherry	
	d hemlock - yellow birch - red maple - basswood - black ash - white ash	
	e white cedar - yellow birch - blue beech - black cherry - trembling aspen - white pine - white ash	
3	Hardwood-Conifer Swamp	46.7
	a yellow birch - red maple - white cedar - trembling aspen - white pine - white elm - silver maple	
	b black ash - white cedar - red maple - white elm - black cherry - yellow birch - tamarack - hemlock	
	c yellow birch - silver maple - black ash - red maple - basswood - white cedar - white elm - hemlock	
4	Conifer-Hardwood Swamp	4.5
	a white cedar - yellow birch - black ash - hemlock - red maple - tamarack - white pine	
	b white cedar - tamarack - trembling aspen - hemlock - red maple - black ash - yellow birch	
	c white cedar - hemlock - red maple - yellow birch - white elm - black ash	
5	Hardwood Swamp	16.3
	a silver maple - red maple - yellow birch	
	b silver maple - cottonwood - white ash - black ash - white elm - red maple	
	c silver maple - willow	
	d red maple - yellow birch - white elm - silver maple - black ash	
	e trembling aspen - red maple - silver maple - blue beech - balsam poplar - black ash - black cherry	
6	Tall Shrub Swamp	8.2
	a dogwood - willow - winterberry - mountain-holly - blueberry	
	b willow - dogwood - white cedar - common elderberry - highbush cranberry - nannyberry - alder-leaved buckthorn	
7	Cat-tail Marsh	0.2
8	Low Shrub-Herb Community: black huckleberry - climbing nightshade - sedge - large cranberry - moss	0.2

. . . Continued

LEGEND: Figure 4 Continued

9	Pond Vegetation: yellow pond lily - variable pondweed OW - unvegetated open water	0.2
10	Plantation a red pine - white pine - scotch pine b white pine - white spruce - Norway spruce - European larch c white pine - black walnut - European larch	0.9
11	Highway Rights-of-Way: graminoid - weedy alien community complexes	9.5
12	Hydro Line corridor: community complex	(outside ANSI)

Note: a) Site conditions for 11 and 12 are too variable to fit into the matrix and 10 is omitted because the communities are not natural.

b) Unless otherwise noted, all placement of communities and associations is based on the Southern Deciduous Forest Region matrix chart (Maycock, 1979).

(D.E.) refers to Southern Deciduous - Evergreen Forest Region matrix chart (Maycock, 1979).

(S) indicates a non-climactic successional stage association

5 ----- indicates a moisture regime continuum
3

| indicates a substrate or temperature continuum

3

mosses and lichens (Cladonia spp.),
resulting in a more open habitat.

C) Disturbance:

- two large hydro lines follow the corridor
- vegetation control is undertaken periodically by Ontario Hydro especially for woody species

D) Significant Features:

- five significant vascular plants are present, all of which occur on the more open slightly acid sand where lower vegetation (maximum of 30 cm (12 in.) in height) prevails

E) Composition:

- no definite patterns or dominant species are apparent other than those mentioned in the preceding description of the ground cover
- additional species are listed in Appendix A in the "communities of occurrence" column

(iii) FLORISTICS

(a) Taxonomic Analysis

There were 598 vascular plant species identified within or immediately adjacent to, the Dorchester Swamp A.N.S.I. during the study, plus five extra varieties and one additional form. Of these, 118 (20%) are not native to North America (Fernald, 1970). Refer to Appendix A for a complete listing.

Ninety-three families are represented, 18 of which have at least ten representative species each within the study area. A list

of these families is given in Table 3 with the corresponding number of species for each. The top ten families on the list (11%) account for over 50% (311) of all species present. Note that the top three alone account for almost 32% (188) of the total. On the other hand, 62% (58) of all families are represented by three species or less, while 30% (28) are present by virtue of a single species.

A summary of the native, alien and rare vascular plant totals by community type is presented in Table 4. The greatest diversity of native species occurs within the four swamp community types and the highway rights-of-way. More than half of all native plants recorded for the entire A.N.S.I. may be found in each of the hardwood swamp (62%) and hardwood - conifer swamp (56%). The tall shrub swamp contains 35% of all native plants recorded, the highway rights-of-way 31%, and the conifer-hardwood swamp 29%. With the exception of the conifer - hardwood swamp these communities also have the most native species that are unique to their respective types as well as the greatest number of rare species.

In determining the degree of disturbance to a community from either natural or human causes (primarily the latter), the ratio of native to alien species provides a rough but useful index for rating purposes. Figures were calculated for those communities or community complexes for which at least 88 plant species were recorded. The most disturbed from this standpoint is the highway rights-of-way with a value of 1.3. It is of interest to note that 110 of the 118 aliens recorded (93%) are present here. The hydro line corridor with a value of 2.6 is the next most disturbed. By contrast, all but the upland deciduous forest of the upland and swamp natural community types have values ranging from 27 (hardwood swamp) to 56 (tall shrub swamp). Hardwood - conifer swamp is 30, conifer - hardwood swamp is 35, and

Table 3: Vascular Plant Families Ranked According to the Number of Species Recorded for Each within the Dorchester Swamp A.N.S.I.

NUMBER OF FAMILIES	FAMILY NAME	NUMBER OF SPECIES
1	ASTERACEAE (Aster)	68 (23) [1]
1	POACEAE (Grass)	63 (19)
1	CYPERACEAE (Sedge)	57 (1)
1	ROSACEAE (Rose)	31 (4)
1	RANUNCULACEAE (Crowfoot)	18 (1)
2	LILIACEAE (Lily)	17 (1)
	BRASSICACEAE (Mustard)	17 (11)
1	SALICACEAE (Willow)	14 (2)
2	CAPRIFOLIACEAE (Honeysuckle)	13
	POLYGONACEAE (Buckwheat)	13 (7)
1	LAMIACEAE (Mint)	12 (3)
	ASPLENIACEAE (Spleenwort)	11
	ORCHIDACEAE (Orchid)	11 (1)
4	SCROPHULARIACEAE (Figwort)	11 (6)
	FABACEAE (Bean or Pea)	11 (9)
	JUNCACEAE (Rush)	10
3	ONAGRACEAE (Evening Primrose)	10 (1)
	VIOLACEAE (Violet)	10 (1)
2	SAXIFRAGACEAE (Saxifrage)	9 (1)
	CARYOPHYLLACEAE (Pink)	9 (7)
2	APIACEAE (Parsley)	8 (1)
	PINACEAE (Pine)	8 (3)
1	RUBIACEAE (Madder)	7
	ERICACEAE (Heath)	6
2	CHENOPODIACEAE (Goosefoot)	6 (4)
	ACERACEAE (Maple)	5
4	CORNACEAE (Dogwood)	5
	LEMNACEAE (Duckweed)	5
	LYCOPODIACEAE (Club-moss)	4
6	Refer to Appendix A for family names	
16	Refer to Appendix A for family names	3
14	Refer to Appendix A for family names	2
28	Refer to Appendix A for family names	1
93 (TOTAL FAMILIES)		598 (TOTAL SPECIES)

[1] Number of alien species included in preceding species total.

TABLE 4: Native, Alien and Rare Vascular Plant Totals for Each Community Type within the Dorchester Swamp A.N.S.I.

Community Type	Number of Species			Number of Rare Species		
	Native[1]	Alien[1]	Total	Ont.[2]	Can.[3]	Co.[4]
1. Upland Deciduous Forest	82 (1)[5]	6	88 (1)[5]			
2. Upland Mixed Forest	109 (4)	3	112 (4)	1	1[6] (1)	
3. Hardwood-Conifer Swamp	270 (12)	9 (1)	279 (13)	2	4 (11)	7
4. Conifer-Hardwood Swamp	141 (5)	4	145 (5)		1 (2)	1
5. Hardwood Swamp	297 (27)	11	308 (27)	1	2 (11)	9
6. Tall Shrub Swamp	169 (13)	3	172 (13)		1 (9)	8
7. Cat-tail Marsh	51 (2)	1	52 (2)		2 (2)	
8. Low Shrub-Herb Pond Margin	25 (9)	1	26 (9)		(5)	5
9. Pond: floating aquatic macrophytes	2 (1)		2 (1)			
10. Plantation	6 (1)	6 (3)	12 (4)			
11. Highway Rights-of-Way complexes	148 (43)	110 (75)	258 (118)	2	2 (14)	12
12. Hydro Line Corridor complex	74 (9)	28 (3)	102 (12)	2	1 (5)	5

1 after Fernald (1970).

2 after Argus and White (1977) and subsequent revisions in the Atlas of the Rare Vascular Plants of Ontario.

3 after Kershaw, Morton and Venn (1976) and White and Maher (1983).

4 known from no more than four locations in Middlesex County (McLeod and Cook, 1981, 1982, 1982b; Cook and McLeod, 1981, 1983, 1984; Hilts and Macfabe, 1978).

. . . Continued

TABLE 4 ... Continued

[5] numbers in parentheses refer to the number of native and/or alien species unique to the corresponding community type within the A.N.S.I.

[6] numbers in parentheses refer to the total number of rare species within the corresponding community type; since some species hold rare status at more than one level, the sum of the three numbers on the line above often exceeds this number.

NOTE: for brevity, only the physiognomic portion of the community name is used in the above table. Refer to Tables 2a and 2b and the text for the composition of each type given.

upland mixed forest is 36. The value for the upland deciduous forest is 14, still quite removed from the lowest values.

To provide some perspective to these figures, the highest and lowest native to alien vascular plant ratios are given for two other A.N.S.I.'s. The lowest value for the Bayfield North A.N.S.I. was 1.4 (roadside), and for the Big Otter Creek A.N.S.I., 0.76 (field headlands). Roadside was 1.8 for the Big Otter Creek. The highest value at the first location was 12.9 (upland deciduous forest) while at the latter it was 16.7 in the case of the south-facing slope forest (McLeod, 1985, 1986).

Some plant families or groups are especially well represented in the Dorchester Swamp. Five of the six club-mosses (Lycopodium spp.) known to Middlesex County are present as are nineteen ferns (58%) of the 33 recorded for the county (Cook and McLeod, 1981; Britton, pers. comm. 1984). The same nineteen ferns were also recorded for the nearby Putnam Tract (McLeod, 1979).

Sixty-six grass family (Poaceae) taxa occur here or 45% of the 148 grass taxa for the county (McLeod and Cook, 1982b).

More than half (53%) of the 91 Carex species of sedges known to occur in Middlesex County are present (McLeod and Cook, 1982a; Dearness, 1907).

Ten (66%) of the 15 rush family (Juncaceae) members occur (Cook and McLeod, 1983).

Of the 34 orchid species for which verified material evidence from Middlesex County exists (Whiting and Catling, 1984), eleven (almost one-third) were found within the A.N.S.I. during the study. An additional species, the leafy white orchis (Platanthera dilatata), was recorded on July 18, 1904 in the minutes of the Botanical Section of the Entomological Society of Ontario (Judd, 1969) but was not found in 1985. The rare yellow ladies'-tresses (Spiranthes ochroleuca) (Photos L25, L26, L27, Appendix J) was only the third record for Middlesex County. Its distribution is restricted to just seven counties in southwestern Ontario for some of which only single stations are known (Brown, 1983; Brown and Catling, 1981). The following additional orchid species were photographed and the colour slides are included in Appendix J:

- grass-pink (Calopogon tuberosus) Photo L16
- small yellow lady's-slipper (Cypripedium calceolus var. parviflorum) Photo L17
- showy lady's-slipper (Cypripedium reginae) Photos L18, L19
- Loesel's twayblade (Liparis loesellii) Photo L20
- ragged-fringed orchid (Platanthera lacera) Photo L21
- small purple-fringed orchis (Platanthera psycodes) Photo L22
- nodding ladies'-tresses (Spiranthes cernua) Photo L23

Willows (Salix spp.) are also well represented. Ten of the thirteen species within the county are present in the swamp communities (Cook and McLeod, 1984).

Although no attempt was made to compile a list of non-vascular plant species for the A.N.S.I., many kinds of mosses, liverworts, lichens and fungi plus a few types of algae were observed, especially in the swamp communities.

In the words of Dr. F.S. Cook, a bryologist in the

Department of Plant Sciences at the University of Western Ontario in London, "The whole swamp has an exceedingly rich moss flora." (Cook, 1971). A checklist of 42 mosses, 2 liverworts and 4 lichens was prepared by Dr. Cook for the nearby Putnam Tract during a study of that area (McLeod, 1979) where most of the same community types are present. It is quite probable that most of them are also within the A.N.S.I. The list is provided in Appendix K.

Two additional species of aquatic liverworts were recorded just outside the A.N.S.I. They are Riccia fluitans which was associated with Lemna and Wolffia species floating at the eastern edge of the cat-tail marsh, and Ricciocarpus natans which was stranded on the muddy shore at the same location. Both are common species but are often overlooked because of their similarity to other small aquatics (Steere, 1940).

The fruticose pyxie cup lichen (Cladonia pyxidata) was recorded from the drier open sandy areas of the hydro line corridor while the alga (Chara sp.) was found submersed in the slow-moving water of open roadside ditches.

Several species of fungi were noted in each community but few were identified.

(b) Floral Affinities

A definite southern influence is present in the vegetation of the A.N.S.I. Ten vascular plants are typical of the Carolinian Floristic Zone according to Fox and Soper (1952). They are listed in Table 5. Three of these are restricted to the zone in Canada while the remainder are known to occur farther north as well.

Many additional non-Carolinian plants with a southern affinity are listed in Tables 5 and 6. Although they are not treated as typical Carolinian species by Fox and Soper, the geographical

Table 5: Carolinian flora of the Dorchester Swamp A.N.S.I. based on Fox and Soper (1952)

SCIENTIFIC NAME	NOTES
Populus deltoides Marsh.	some disjunct populations
Carya cordiformis (Wang.) K. Koch	some disjunct populations
Carya ovata (Mill.) K. Koch	some disjunct populations
Quercus alba L.	some disjunct populations
Lindera benzoin (L.) Blume	some disjunct populations
Hamamelis virginiana L.	some disjunct populations
Malus coronaria (L.) Mill.	restricted to Carolinian Zone
Prunus serotina Ehr.	ranges far to the north
Eunoymus obovatus Nutt.	restricted to Carolinian Zone
Collinsonia canadensis L.	restricted to Carolinian Zone

SUMMARY

Species restricted to Carolinian Zone:	3
Species with some disjunct populations:	6
Species ranging far to the north:	1
Total species:	10

Table 6: Floristic Affinities* of Selected Vascular Plants within the Dorchester Swamp A.N.S.I.

Southern (non-Carolinian)
(near northern limit of range)

Selaginella eclipes Buck
Cinna arundinacea L.
Sporobolus neglectus Nash
Sporobolus vaginiflorus (Torrey) A. Wood var. inaequalis Fernald
Carex lupulina Muhl.
Carex rosea Schkuhr ex Willd.
Symplocarpus foetidus (L.) Nutt.
Spirodela polyrhiza (L.) Schleid.
Carpinus caroliniana Walt.
Ulmus rubra Muhl.
Pilea pumila (L.) Gray
Rumex verticillatus L.
Claytonia virginica L.
Podophyllum peltatum L.
Sanguinaria canadensis L.
Geum laciniatum Murr.
Viola fimbriatula Sm.
Pedicularis canadensis L.
Phryma leptostachya L.
Lobelia siphilitica L.

Northern (Boreal Forest Floral Region)
(near southern limit of range)

Lycopodium dendroideum Michx.
Taxus canadensis Marsh
Larix laricina (Du Roi) K. Koch
Milium effusum L.
Oryzopsis asperifolia Michaux
Carex disperma Dewey
Carex retrorsa Schwein.
Carex rostrata Stokes
Carex trisperma Dewey
Smilacina trifolia (L.) Desf.
Platanthera hyperborea (L.) Lindley
Betula papyrifera Marsh.
Coptis groenlandica (Oeder) Fern.
Sarracenia purpurea L.
Mitella nuda L.
Potentilla palustris (L.) Scop.
Rubus pubescens Raf.
Acer spicatum Lam.
Rhamnus alnifolia L'Her.
Viola renifolia Gray
Circaea alpina L.
Aralia racemosa L.
Vaccinium angustifolium Ait.
Vaccinium myrtilloides Michx.
Trientalis borealis Raf.
Menyanthes trifoliata L. var. minor Raf.
Linnaea borealis L.

Western
(near eastern limit of range)

Puccinellia nuttalliana (Schultes) A.S. Hitchc.
Carex praegracilis W. Boott
Eleocharis compressa Sulliv.
Juncus balticus Willd.
Lilium michiganense Farw.
Physocarpus opulifolius (L.) Maxim.
Acer negundo L.
Cornus obliqua Raf.
Aster sagittifolius Wedemeyer
Rudbeckia laciniata L.

Eastern
(near western limit of range)

Osmunda claytoniana L.
Tsuga canadensis (L.) Carr.
Thuja occidentalis L.
Eragrostis frankii C.A. Meyer ex Steudel
Glyceria melicaria (Michaux) Hubbard
Carex laxiflora Lam.
Betula alleghaniensis Britt.
Nemopanthus mucronata (L.) Trel.
Cornus alternifolia L. f.
Vaccinium corymbosum L.
Lonicera canadensis Bartr.
Triosteum aurantiacum Bickn.
Viburnum cassinoides L.

* The affinity of each species listed was determined from the range descriptions provided by Fernald (1970) and Scoggan (1978a, 1978b, 1978c, 1979).

NOTE: Additional species with northern or southern affinities may be found among the significant vascular plants listed in Table 7.

centres of their ranges are likewise in the eastern United States to our south and they occur here near the northern limit of their ranges (Fernald, 1970; Scoggan, 1978a, 1978b, 1978c, 1979).

Northern species also make a strong showing within the A.N.S.I. These are typical of the Boreal Forest Floral Region (Scoggan, 1978a) with the geographical centres of their ranges farther north. Refer to Tables 6 and 7 for plant names in this category. Many range as far west as the Pacific coast and as far north as Alaska, the Northwest Territories, northern Quebec and Greenland. It should also be noted that although some of these species occur as far south as northern Georgia in the United States, they do so only at higher elevations in the Appalachian Mountains where more boreal climatic conditions exist (Fernald, 1979; Scoggan, 1978a, 1978b, 1978c, 1979). Their persistence here since the retreat of the glaciers suggests that the swamp communities, where the majority of these species are found, have been able to maintain a cooler than normal microclimate, thus allowing them to survive this far south.

Fewer plants are present with eastern and western affinities near the western and eastern limits of their ranges respectively (ibid.). Examples of each are also given in Table 6.

Two large swards of long manna grass (Glyceria melicaria) in associations 3b and 5b represent a considerable southward extension of the range for this species which is not known elsewhere south of Parry Sound in Ontario (Dore and McNeill, 1980; Reznicek, pers. comm. 1985; Crins, pers. comm. 1985). A specimen in the University of Western Ontario herbarium was collected near London but gives no specific location. It may well have been the Dorchester Swamp.

Nuttall alkali grass (Puccinellia nuttalliana) also represents a southward extension of its range in Ontario. It is presently known from just three other locations in Ontario, the southernmost being the Ottawa area where it was recently discovered by D. Brunton as an introduction along a highway similar to the present case (Crins, pers. comm. 1985).

The presence of northern starwort (Stellaria calycantha) may also represent a slight southern extension of its range in Ontario where it is previously known only from Waterloo County (Hilts and Macfabe, 1978). However, this has not yet been verified. The same may also be true for the small bur-reed (Sparganium minimum) which is also only recorded from Waterloo County (ibid.). Neither has been recorded from Elgin, Norfolk, Lambton, Perth or Oxford counties (ibid.) and they are not known from Essex County (Botham, 1981).

CHAPTER 4: FAUNA

(i) BIRDS

Eighty-seven bird species were recorded for the area. A complete list is provided in Appendix B. Fifty-six are summer residents. Most of these, plus the 21 permanent residents probably use the area as their breeding grounds. Of this group 13 were confirmed breeders, 29 were probable and 30 were possible breeders as defined by Eagles and Cadman (1981). Three of the remaining 5 species, the Rock Dove, Belted Kingfisher and Bank Swallow, were observed during the peak breeding period from early June to mid-July, but these lacked suitable nesting habitat within the A.N.S.I. and were using the area for feeding purposes alone. The other two, the Eastern Bluebird and the American Kestrel were observed outside of the breeding season, the former on October 13 when a flock of thirteen birds was present and the latter during the winter. However, they are potential breeders as suitable habitat is available for nesting purposes.

Twelve species nest in tree cavities. Most of the remainder build nests in tree or shrub branches or in tall emergent aquatic vegetation such as cat-tails (Typha spp.) and bulrushes (Scirpus spp.). The remaining few which includes the Ruffed Grouse and Ovenbird nest on the ground in upland forest or swamp communities.

Several typically southern species are here near the northern edge of their breeding ranges. These include the Blue-gray Gnatcatcher, Wood Thrush, Yellow-throated Vireo, Golden-winged Warbler, Blue-winged Warbler, Cardinal, Indigo Bunting and Rufous-sided Towhee. They prefer the forested communities or semi-open shrub areas and forest edge habitats for nesting purposes.

Two species, the Northern Waterthrush (a ground-nesting warbler like the Ovenbird) and the White-throated Sparrow are near the southern edge of a more northern breeding range. These are enticed to breed here because of the boreal-like conditions found in the white cedar dominated areas of the swamp communities. Breeding ranges were determined from Godfrey (1966) and James et al. (1976).

A recently established Great Blue Heron heronry was discovered in the hardwood swamp area to the east of the A.N.S.I. Eight nests were present. Further details are given in Appendix G where a copy of the heronry registration form submitted to the Ontario Heronry Inventory programme is provided. This and another heronry approximately 9 km to the east are within the ten-kilometre square surveyed by the author for the five-year Ontario Breeding Bird Atlas project which terminated in 1985. The Great Blue Heron nests throughout Ontario (Peck and James, 1983) but suitable nesting sites are much more limited in the south because of the clearing of forests for agricultural purposes.

Additional breeding bird information was sought from the individual responsible for the ten-kilometre square containing most of the A.N.S.I. for the Ontario Breeding Bird Atlas (Hearn, pers. comm. 1985). However, no new breeders were added to the list.

Seven migrants were recorded. They use the area for feeding and resting purposes each spring and fall while enroute to and returning from their northern breeding grounds. Most of the wood warblers fall into this category but only four were recorded due to limited field time at the appropriate seasons.

Likewise, just three exclusively winter residents were observed, the Winter Wren, American Tree Sparrow and Dark-eyed Junco, all on the last visit to the area in mid-October. Several others such as the

Evening Grosbeak, Pine Grosbeak, Red Crossbill, White-winged Crossbill, Pine Siskin, common Redpoll and Snow Bunting may have been recorded had the observation period been extended into the winter months.

The most frequently recorded species (those occurring at least 50% of the time or on at least 10 of the 19 days the area was visited) were: American Goldfinch, Black-capped Chickadee, American Robin, Song Sparrow, Swamp Sparrow, Red-winged Blackbird, Cedar Waxwing, Gray Catbird, Blue Jay, Common Yellowthroat, American Crow, Northern Cardinal and Northern Flicker.

(ii) MAMMALS

Eleven species of mammals were recorded within the Dorchester Swamp A.N.S.I. during the study. Records for American Beaver, Coyote, Red Fox and American Mink were provided by three local trappers, while the Masked Shrew was found dead by the author in 1983. Three other species which were observed at the nearby Putnam Tract (McLeod, 1979) likely occur here as well because of the availability of suitable habitat. Thus, nineteen mammals are listed in Appendix C for the A.N.S.I. Additional census work and small mammal trapping would probably result in several additional species being added to the list. resulting in a more accurate picture of the present mammal populations.

White-tailed Deer signs were encountered regularly during the study. The Dorchester Swamp is classed as an area of deer range and concentration (Unit 12) by the Ontario Ministry of Natural Resources, Aylmer District. This is especially true during the winter months when the swamp communities provide good cover and abundant browse for deer.

At least four trappers have been active within the study area during the past five years (O.M.N.R., n.d.). The main fur-bearers harvested are Muskrat, Raccoon, Mink and Red Fox (O.M.N.R., 1985).

The coyote is a western species which has proliferated in Southern Ontario in recent years. Hamilton and Whitaker (1979) state that "In spite of the encroachments of civilization, the adaptive coyote . . . appears to be increasing in all parts of its range." and "The coyote . . . is an inhabitant of the brush country, but is equally at home in the forests . . .". Its presence within the A.N.S.I. was reported by Huber (pers. comm. 1985) and Small and McBurney (1977) where it doubtlessly finds shelter and an abundant food supply. Its main food is small mammals but in the summer months it also eats fruit and insects (Hamilton and Whitaker, 1979).

Although no signs of beaver activity were observed within the study area, a roadkill was found on Highway 401 at the east end of the swamp in 1981 (North, pers. comm. 1985). Like the Coyote, it appears to be on the increase locally in recent years and should be expected to become established here given the presence of slow moving forested streams and the abundance of poplars (Populus spp.), its favorite food and material for dam and lodge construction. See also the discussion by McLeod (1981) about its recent occurrence within the City of London nearby.

(iii) REPTILES AND AMPHIBIANS

Appendix D lists 12 amphibians and seven reptiles which were recorded either during the study or at the nearby Putnam Tract (McLeod, 1979), or are considered to have a high probability of being present because of widespread occurrence in the counties of Middlesex (Hawkins, 1979b) and Oxford (Milnes, 1946) and the availability of

suitable habitat within the A.N.S.I.

Just two reptiles, the Midland Painted Turtle and the Eastern Garter Snake were observed within the study area. Several of the former were present in the pond at the western edge of the south-east quadrant, basking on logs at the pond margin. The common Snapping Turtle, Blanding's Turtle and the Northern Water Snake may also be expected in this habitat since all were recorded from the nearby Putnam Tract under similar conditions. Suitable habitat likewise exists for the uncommon but widespread Northern Brown Snake (Dekay's) and Eastern Milk Snake, both of which were also present at the Putnam Tract.

Of the twelve amphibians listed, four are salamanders and newts, one is a toad, three are treefrogs and four are true frogs. All but the Mudpuppy, Yellow-spotted Salamander, Red-spotted Newt and Bullfrog were seen and/or heard during the study. The latter was reported by Small and McBurney (1977). The first three are common species throughout Southern Ontario and are virtually certain to occur within the A.N.S.I. which provides large areas of suitable habitat for them all, from the permanent waters of the Dorchester Swamp Creek for the Mudpuppy to the swamp communities for the Yellow-spotted Salamander and Red-spotted Newt.

All amphibians, with perhaps the exception of the Bullfrog, may be considered common to very common throughout southwestern Ontario. Regulations are currently in effect in Ontario to protect the Bullfrog from undue exploitation in the frogs' legs trade since harvesting has caused the decline of some populations (Cook, 1984).

Range and status for individual species was obtained from Cook (1985), Conant (1958) and Logier (1958).

(iv) FISH

Twenty-three fish species have been reported from the Dorchester Swamp Creek, seven of which occurred at three sampling stations within the A.N.S.I. portion of the creek according to a stream survey by the Ontario Ministry of Natural Resources in 1974 and a study by Ward in 1981. A list is provided in Appendix H.

Approximately 5 km of creek is within the swamp, including the upper tributary. The lower 3.24 km of the swamp portion drops from approximately 268 to 259 m elevation above sea level for an average gradient of 2.7m/km. A detritus substrate occurs within this forested area which gives way to gravel just 450 m downstream from the A.N.S.I. border (Ward, 1982). It is classified as "a cold-water stream ($\leq 21^{\circ}$ C) supporting salmonid populations of brook char" by the Ministry of Natural Resources (1983a).

Because of these favourable conditions for a salmonid sport fishery, stocking with Rainbow Trout, Brown Trout and Brook Trout (Char) was carried out as early as the 1950's. Through the fifties and sixties 12,500 Brook Trout and an unknown number of Brown Trout were stocked and from 1967 to 1979, 1500 Rainbow Trout (Ward, 1982). At the time of Ward's 1981 study only the Brook Trout remained of the three throughout the length of the creek and it was present within the A.N.S.I. portion as well. Thus, it has persisted for more than ten years after the last stocking and so may be considered established. However, O.M.N.R. (1983a) suggests there is still a potential for further rehabilitative activities.

(v) INVERTEBRATES

Only incidental records were kept of insect species encountered during the study and other invertebrates were ignored completely.

Of the insects, butterflies received the most attention. However, no collecting was done and only sight records are available. A preliminary list is provided in Appendix I. Seventeen species were observed within the A.N.S.I. while an additional nine were recorded from the nearby Putnam Tract in 1978 and 1979 (McLeod, 1979) where similar habitat types exist.

Two rare moth species for Middlesex County have been reported from the Dorchester Swamp. They are: Haplooclophus mollissima whose larva feeds on ferns and Marathyssa basalis whose larval food plant is poison ivy (Rhus radicans) (Nature Conservancy of Canada, 1984; Rockburne and Lafontaine, 1976).

A male of the large spice bush silk moth (Callosamia promethea) was photographed in the swamp during the study (Photos L36, L37, Appendix J).

Additional information about moths is available from amateur lepidopterist, J. Cushing of London who has made recent collections in the south-west quadrant of the A.N.S.I.

A phantom crane fly (Bittacomorpha clavipes) was also photographed within the swamp (Photo L38, Appendix J) during the study. The larvae of this species live in decaying plant materials in shallow water at the edges of ponds and marshes and adults occur in swampy areas (Borror and White, 1970; Klots, 1966). The pair shown in the photograph are copulating, the male being the smaller individual.

CHAPTER 5: SIGNIFICANT FEATURES

(i) SIGNIFICANT FLORA

Forty-six species of vascular plants are considered to be significant within the A.N.S.I. They are listed in Table 7 and their specific locations are mapped in Figure 3. To be significant a plant is known to be rare at either the provincial or national level. Also a plant is significant as a rare county species if it is not known to occur at more than three other locations within Middlesex County.

Six of the significant species are rare in Ontario, ten are rare in Canada and thirty-eight are rare in Middlesex County. Only the margined rush (Juncus marginatus) is rare at all three levels. Three others, rough dropseed (Sporobolus asper), horsebalm (Collinsonia canadensis) and sweet Joe-Pye-weed (Eupatorium purpureum) are rare both provincially and nationally.

Seventeen species were new records for Middlesex County (based on many sources specified in Table 7). Thirteen others were only second records for the county, six were third records and two were recorded for the fourth time.

Almost one-half (22) of the significant vascular plants have a northern affinity while eleven are characteristically southern, including one Carolinian Zone species. The remainder either have an eastern (5) or western affinity (5), occur near the middle of their ranges (5), have a cosmopolitan distribution (1) or are alien (non-North American) introductions (1).

It is also noteworthy that over forty percent (20) of the rare vascular plants belong to the sedge (Cyperaceae) (12) and grass (Poaceae) (8) families.

Table 7: Significant vascular plants of the Dorchester Swamp A.N.S.I.

Scientific Name	Rare in Ont.[1]	Can.[2]	Midd.[3]	Affinity[4].	Voucher Loc.	Notes
Lycopodium annotinum L.			X	N	UWO OAC	2nd Midd. record
Lycopodium inundatum L.			X	N	UWO OAC TRTE	3rd Midd. record
Equisetum sylvaticum L.			X	N	UWO OAC TRTE	2nd Midd. record
Osmunda claytoniana L.			X	E	UWO	see Photos L28, L29, Appendix J; 3rd Midd. record
Sparganium minimum (Hartm.) Fries			X	N	UWO TRTE	may be a southern range extension 1st Midd. record
Triglochin maritimum L.			X	C	UWO	1st Midd. record
Alopecurus aequalis Sobol.			X	N	UWO TRTE	1st Midd. record
Calamagrostis inexpansa A. Gray			X	N	TRTE	1st Midd. record
Deschampsia caespitosa (L.) Beauv. (typical var.)			X	N	UWO TRTE	1st Midd. record
Glyceria borealis (Nash) Batchelder			X	N	UWO	3rd Midd. record
Glyceria melicaria (Michaux) Hubbard	f		X	E	UWO TRTE	2nd Midd. record, a southern range extension in Ont.
Hierochloe odorata (L.) Beauv.			X	N	UWO TRTE	4th Midd. record
Muhlenbergia glomerata (Willd.) Trin.			X	N	UWO	3rd Midd. record
Panicum linearifolium Scribner (typical var.)			X	S	UWO TRTE	4th Midd. record
Puccinellia nuttalliana (Schultes) A.S.Hitchc.	f	X	X	W	UWO TRTE	1st Midd. record; a southern range extension in Ont.
Schizachne purpurascens (Torrey) Swallen var. pubescens Dore			X	N	UWO TRTE	2nd Midd. record
Sphenopholis intermedia (Rydb.) Rydb. var. pilosa Dore			X	M	UWO TRTE	1st Midd. record

Table 7 Cont'd.

Scientific Name	Rare in Ont.[1]	Can.[2]	Midd.[3]	Affinity[4].	Voucher Loc.	Notes
Sporobolus asper (Michaux) Kunth	X	X		M	UWO TRTE	see Appendix F
Carex cephaloidea (Dewey) Dewey			X	M	UWO TRTE	2nd Midd. record
Carex laevivaginata (Kukenth.) Mack.	f	X		S		
Carex pallescens L.			X	N,E	UWO TRTE	2nd Midd. record
Carex paupercula Michx.			X	N	UWO TRTE	1st Midd. record
Carex peckii Howe			X	N	UWO TRTE	2nd Midd. record
Carex praegracilis W.Boott			X	W	UWO TRTE	1st Midd. record
Carex prairea Dewey			X	N	UWO TRTE	1st Midd. record
Eleocharis compressa Sulliv.			X	W	UWO TRTE	1st Midd. record
Wolffia columbiana Karst.		X		S	UWO	
Wolffia punctata Griseb.		X		S	UWO	
Juncus balticus Willd.			X	N,W	UWO TRTE	1st Midd. record
Juncus marginatus Rostk.	X	X	X	S,E	UWO	see Appendix F; 2nd Midd. record
Spiranthes ochroleuca (Rydb. ex Britt.) Rydb.	X		X	N,E	TRTE UWO	3rd Midd. record, see Appendix F & Photos L25, L26 & L27, Appendix J
Chenopodium botrys L.			X	Alien	UWO	1st Midd. record
Stellaria calycantha (Ledeb.) Bong.			X	N	UWO	1st Midd. record; may be a southern range extension
Cardamine bulbosa (Schreb.) BSP.		X		S	UWO	
Cardamine douglassi (Torr.) Britt.	f	X		S	UWO TRTE	
Ribes odoratum Wendl. fil.			X	W introduced	TRTE UWO	2nd Midd. record
Proserpinaca palustris L.			X	S	UWO	2nd Midd. record
Panax trifolius L.			X	S	UWO	3rd Midd. record; see Photos L34 & L35, Appendix J

Table 7 Cont'd.

Scientific Name	Rare in Ont.[1]	Can.[2]	Midd.[3]	Affinity[4]	Voucher Loc.	Notes
Pyrola asarifolia Michx. var. purpurea (Bunge) Fern.			X	N	UWO	2nd Midd. record
Halenia deflexa (Sm.) Griseb.			X	N	UWO TRTE	1st Midd. record
Collinsonia canadensis L.	X	X		CZ	TRTE	see Appendix F
Aster borealis (T. & G.) Prov.			X	N	UWO TRTE	2nd Midd. record
Bidens discoidea (T. & G.) Britt.	X		X	S	UWO TRTE	2nd Midd. record; see Appendix F
Eupatorium purpureum L.	X	X		M	TRTE	see Appendix F
Gnaphalium viscosum Humb., Bonpl. & Kunth			X	M	UWO	1st Midd. record
Solidago uliginosa Nutt.			X	N	UWO	1st Midd. record
TOTAL SPECIES 46	6	10	38			

[1] after Argus and White (1977) and subsequent revisions in the Atlas of the Rare Vascular Plants of Ontario.

[2] after Kershaw, Morton and Venn (1976) except for Eupatorium purpureum which is based on White and Maher (1983).

[3] known from no more than four locations in Middlesex County (Brownell, 1984; Cook and McLeod, 1981, 1982, 1984; Hilts, 1979; Hilts and Macfabe, 1978; Klinkenberg and Berthiaume, 1977; Macdonald, 1986; McIlwraith Field Naturalists, Inc., 1985; McLeod and Cook, 1981, 1982a, 1982b).

[4] the affinity of each species listed was determined from the range descriptions provided by Fernald (1970), Luer (1975) and Scoggan (1978a, 1978b, 1978c, 1979).

C cosmopolitan (world-wide distribution)

CZ Carolinian Zone

E eastern (the species so designated occurs here near the western limit of its range).

f means the species was formerly considered rare in Ontario (Argus and White, 1977) but has since been excluded from the revised list.

M means the species so designated occurs here near the middle of its range

Midd. Middlesex County, Ontario

N northern (the species so designated occurs here near the southern limit of its range).

Table 7 Cont'd.

OAC refers to the herbarium of the University of Guelph (formerly Ontario Agricultural College).

S southern (the species so designated occurs here near the northern limit of its range).

TRTE refers to the herbarium of the Erindale College campus of the University of Toronto.

UWO refers to the herbarium of the University of Western Ontario.

W western (the species so designated occurs here near the eastern limit of its range).

X means the indicated status applies to the species in question.

Note: The locations of the above significant vascular plants are mapped on Figure 3.

Little information was gathered about non-vascular plants because of time constraints, but it is both the author's and a professional bryologist's opinion that "The whole swamp has an exceedingly rich moss flora" (Cook, 1971) in terms of both species diversity and abundance. There is also significant representation of liverworts, lichens and fungi. Determination of rare species within these and other plant groups such as algae awaits further studies of the area.

The presence of two species, long manna grass (Glyceria melicaria) and Nuttall alkali grass (Puccinellia nuttalliana) within the A.N.S.I. represents significant southern extensions of their current ranges. The former is of greater significance than the latter, however, since it is a relict species from post-glacial times while the alkali grass is a recent introduction to the A.N.S.I. The occurrence of two other species, the northern starwort (Stellaria calycantha) and the small bur-reed (Sparganium minimum) are tentatively determined as representing slight southern extensions of their known ranges prior to their discovery within the study site.

(ii) SIGNIFICANT FAUNA

No species of fauna recorded during the study is threatened or endangered according to the regulations made under the Endangered Species Act of the Province of Ontario (O.M.N.R., 1971, 1977, 1981).

Seven bird species are considered to be significant because of their rare breeding status locally. They are: Great Blue Heron, Blue-gray Gnatcatcher, Yellow-throated Vireo, Blue-winged Warbler, Golden-winged Warbler, Northern Waterthrush and White-throated Sparrow. The location(s) for each species is mapped in Figure 3.

The Great Blue Heron heronry was previously unrecorded for the Dorchester Swamp by both the Ontario Heronry Inventory and the Aylmer

District Office of the Ontario Ministry of Natural Resources (Hunter, pers. comm. 1985).

The Blue-gray Gnatcatcher, Yellow-throated Vireo, Blue-winged Warbler and Golden-winged Warbler are rare breeders, nesting here near the northern edge of their range, while the Northern Waterthrush and White-throated Sparrow are near the southern edge of theirs.

A significant White-tailed Deer population is present within the A.N.S.I., especially in winter.

No individual species of amphibian or reptile is especially significant although a good diversity of species occurs.

A significant Brook Trout (Char) sport fishery has been established in the Dorchester Swamp Creek which flows through the A.N.S.I.

All butterfly species recorded are common but two moth species are rare. Haploolophus mollissima has previously been collected from Trenton, Ontario, eastward to Lac Mondor in Quebec (Rockburne and Lafontaine, 1976). Marathyssa basalis has been collected only in eastern Ontario (ibid.) However, their rarity may prove to be more apparent than real since their known distribution patterns within the province tend to reflect those areas where collecting activity has been most concentrated. Neither is it known if specimens exist to support their presence here since the Nature Conservancy's 1984 annual report gives no source for the information.

(iii) SIGNIFICANT PLANT COMMUNITIES OR ASSOCIATIONS

None of the communities or associations can be considered unique but all swamp community types are rather typical of those found in swamps throughout Site District 7-6. The other natural communities and associations present (both upland and other wetland types) are

frequently associated with the swamp types, with the exception of the ericaceous community 8 which is uncommon to rare locally and usually confined to morainic areas in association with kettle ponds. Otherwise they all contribute to the general representativeness of this A.N.S.I. for the Site District as a whole. This is discussed further in the following section in terms of the contribution of each to the overall significance of the A.N.S.I.

(iv) OVERALL SIGNIFICANCE OF THE DORCHESTER SWAMP A.N.S.I.

The significance of the A.N.S.I. is here considered with respect to the five standard site selection criteria used by Hannah (1984) in the original evaluation and designation of the Dorchester Swamp as a Candidate Nature Reserve. The swamp was subsequently listed in the Aylmer District Land Use Guidelines (1983b) as one of the 16 most significant A.N.S.I.'s within the district because of its contribution to the Ministry's protection objective. The five criteria are: representation, diversity, condition (degree of disturbance), ecological considerations and special features. Since these are not mutually exclusive entities, they are discussed in conjunction with each other below.

Hanna (1984) determined that the Dorchester Swamp A.N.S.I. "provides a good example of the swamp vegetation typical of Site District 7-6 and a high diversity of vegetation types." The present study shows the area to be composed of nine non-anthropogenic communities grouped within the two broad categories of uplands and lowlands (or wetlands) plus three anthropogenic types. All nine natural communities and the sub-classifications (associations) of each (if any) are described in detail in Chapter 3 and mapped in Figure 3.

The core and most representative part of the A.N.S.I. is that

occupied by the four swamp communities (3 to 6) since they are the very essence of that which is being represented (i.e. the swamp). However, the remaining five natural communities provide representation of those communities which are to be found associated with the swamp types. They thus make some contribution to the overall representation in that they provide the setting and context within which the swamp is viewed and understood.

This overall representation is further enhanced by the great diversity of community and association types present within the Dorchester Swamp.

Another component of diversity to be considered is the number of vascular plants present and the number of native species in particular. A total of 604 vascular plant taxa was recorded during the study including 485 native taxa. Unfortunately, no totals for swamps of a similar size in southwestern Ontario were located so that the figures for Dorchester Swamp could not be placed in perspective. However, it may be said to be as diverse as other A.N.S.I. types. For example, the Big Otter Creek A.N.S.I. (a river valley system) which is 100 ha larger than the Dorchester Swamp is reported to contain 631 vascular plant taxa of which 494 are native (McLeod, 1986). The overall native to alien species ratio is 3.6. For the swamp the totals are only marginally less but the number of native species relative to the total is proportionately larger with the native to alien species ratio being 4.1. Since it was concluded that "a high level of floristic diversity exists" within the Big Otter Creek A.N.S.I. when compared with three other river valley systems, it thus seems reasonable to conclude that the same holds true for the Dorchester Swamp A.N.S.I.

Some communities make a relatively greater contribution than

others because of their size and configuration. Thus, the 256.1 ha (632.6 acres) hardwood-conifer swamp makes a greater contribution than either the hardwood swamp (89.2 ha), the tall shrub swamp (45.1) or the conifer-hardwood swamp (24.6) while together they comprise 415 ha or 76 percent of the entire A.N.S.I. From a configuration standpoint the largest hardwood-conifer swamp type also provides the most continuous pattern throughout the area while the others tend to be broken into more isolated portions.

Condition of a community or its quality, expressed in terms of the degree of disturbance which it has experienced, either enhances the representativeness of both the community itself and the A.N.S.I. as a whole or else detracts from it.

While evidence of timber harvesting and fuelwood cutting is present throughout the area it is not known to what extent it has altered the various communities and diminished their naturalness. The most obvious disturbances appear to be concentrated in fairly small areas, however. An archery target shooting course covering perhaps 2 ha has been laid out in the southern portion of association 2a in the south-west quadrant while about the same area has been recently cleared from association 3b in the southwestern corner of the same quadrant. Cattle were allowed to roam into part of association 5e in the north-west quadrant which was not fenced off from adjacent pasture land. A small amount of fill has been placed in association 5a on the east side of Highway 73 just north of the cloverleaf area. The Donnybrook Drifter's snowmobile trail passes through the northern half of the swamp and is regularly maintained. Occasional instances of shelter building and camp fires were noted adjacent to Highway 401. Two deer hunting platforms were discovered, one in association 5d and the other in association 2a in the north-west and south-west quadrants

respectively while other hunting evidence was evident throughout.

By contrast the construction of Highways 401 and 73 and the land clearing for the hydro line corridor have resulted in the establishment of entirely new communities within the area which, however, contribute nothing to the representation of this A.N.S.I.

As mentioned in the "floristics" section of Chapter 3, the highest values for the native to alien vascular plant ratio were attained by the swamp and upland forest communities. By this measure the tall shrub swamp (56) is the least disturbed, followed by the upland mixed forest (36), the conifer-hardwood swamp (35), the hardwood-conifer swamp (30), the hardwood swamp (27) and the upland deciduous forest (14). Considering that the four least disturbed communities in the Big Otter Creek A.N.S.I. had values ranging from 14 to 17, it would appear that the most representative communities of the Dorchester Swamp A.N.S.I. are relatively undisturbed. Since these six communities account for almost 90% of the total area, it follows that the site overall has a low disturbance rating and is of relatively high quality. From an aesthetic viewpoint, however, the A.N.S.I. would be regarded as quite disturbed because of the imposing presence of the highways and hydro line corridor.

The special features of the area have been presented in the previous portions of this chapter and mapped in Figure 3. In summary though, the A.N.S.I. plays host to a relatively large number of rare vascular plant species of which 6 are rare provincially, 10 are rare nationally and 38 are rare in Middlesex County. Two bird species with northern breeding affinities and four birds with southern breeding affinities are rare breeders in the area while one species, the Great Blue Heron, is a locally rare breeder. The A.N.S.I. also supports a significant wintering deer population and a brook char sport fishery.

In light of the above discussion and the study results, it is therefore concluded that the Dorchester Swamp A.N.S.I. is an excellent representative of a swamp within Site District 7-6 if one disregards the negative visual impact resulting from the presence of the two provincial highways and the hydro line corridor.

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Several landowners and local residents were most hospitable, providing both permission to enter their property as well as additional information about the area.

GLOSSARY

Association: Used in two senses : 1) Generally, with respect to the assemblage of plants within a community; 2) Specifically when a community is discernible because of its relatively uniform species composition and domination by particular species (Smith, 1980), and so can be described in terms of its dominant plant species.

Community: Used in a general way to mean "a studiable grouping of organisms which grow together in the same general place and have mutual interactions" (Curtis, 1959); used here to describe a unit of vegetation, that is visually discernible in the field without the aid of quantitative sampling methods, and which can be designated physiognomically, using terms that combine the dominant vegetation type or major plant formation, with one or more major environmental features (Maycock, 1979); no definite classification rank is implied, except that which may be indicated by the context of the detailed description of the community site and its vegetation.

DBH: "Diameter at breast height. The foresters' convention for a determination of the diameter of a tree at a height of 4 1/2 feet (1.37 m) above the ground" (Curtis, 1959).

Ground cover: Includes all herbaceous plants and seedlings of woody species within a community.

Habitat: Used here with respect to the preferred setting for bird nesting purposes, and refers to both the vegetation and the underlying physical characteristics of a site.

Pioneer hardwoods: Non-coniferous tree species that are light-tolerant, and thus, the first to move into a cleared area that is regenerating naturally. Because of their rapid growth, they become dominant at an earlier successional stage, providing the shade which favours the growth of the later developing climax hardwoods.

Provincially rare: A designation given to an organism which has a range restricted to a relatively small area within Ontario, or which occurs over a large part of the province but in very small numbers. (Argus and White, 1977).

Quadrat: A small, usually square, sampling area laid out at given intervals within a community; in this study, a one metre square used to sample ground cover, or a 200 metre square used to sample the overstory (tree) vegetation (Small and McBurney, 1977)

Remnant: A portion or fragment of an original plant community remaining after the destruction of the bulk of the community by the agricultural or exploitive activities of man.

Shrub layer: All woody vegetation found beneath the trees in a forest, including shrubs, vines and saplings of the overhead trees but excluding the seedlings of those woody species. The shrub layer and ground cover as defined here, are therefore mutually exclusive.

Stand: Used here in two senses : 1) A "unit of vegetation that is essentially homogeneous in all layers and differs from adjacent types qualitatively and quantitatively" (Smith, 1980); 2) In a very general sense "a particular example of a plant community" (Curtis, 1959); the meaning in a given case is to be determined by the context.

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APPENDICES

APPENDIX A: CHECKLIST OF THE VASCULAR PLANTS OF THE DORCHESTER SWAMP AREA OF NATURAL AND SCIENTIFIC INTEREST

APPENDIX B: BIRDS OF THE DORCHESTER SWAMP AREA OF NATURAL AND SCIENTIFIC INTEREST

APPENDIX C: MAMMALS OF THE DORCHESTER SWAMP AREA OF NATURAL AND SCIENTIFIC INTEREST

APPENDIX D: AMPHIBIANS AND REPTILES OF THE DORCHESTER SWAMP AREA OF NATURAL AND SCIENTIFIC INTERESTT

APPENDIX E: QUANTITATIVE ANALYSIS OF POINT-QUARTER AND QUADRAT VEGETATION SAMPLING DATA

APPENDIX F: RARE VASCULAR PLANT ATLAS FORMS

APPENDIX G: ONTARIO HERONRY INVENTORY; HERONRY REGISTRATION FORM

APPENDIX H: FISH OF THE DORCHSTER SWAMP CREEK

APPENDIX I: A PRELIMINARY LIST OF BUTTERFLIES FOR THE DORCCHESTER SWAMP AREA OF NATURAL AND SCIENTIFIC INTERESSTT

APPENDIX J: PHOTOGRAPHS OF THE DORCHESTER SWAMP AREA OF NATURAL AND SCIENTIFIC INTEREST

APPENDIX K: CHECKLIST OF MOSSES, LIVERWORTS & LICHENS OF THE IVEY (PUTNAM) TRACT BY DR. F.S. COOK (TAKEN FROM MCLEOD (1979)) (APPROXIMATELY 1 KM NORTHEAST OF DORCHESTER SWAMP A.N.S.I.)

APPENDIX L: HERBARIUM LEABELS FOR PROVINCIALLY RARE VASCULAR PLANT SPECIES WITHIN THE DORCHESTER SWAMP AREA OF NATURAL AND SCIENTIFIC INTEREST

APPENDIX A: CHECKLIST OF THE VASCULAR PLANTS OF THE DORCHESTER SWAMP AREA OF NATURAL AND SCIENTIFIC INTEREST

A total of 598 species of vascular plants was recorded for the area plus 5 extra varieties and 1 other form for a total of 604 taxa.

Nomenclature and the order in which the plant families are presented, follow Fernald (1970) in most cases. However, he capitalizes many specific epithets, and since this practice is "becoming less common, and is not recommended by the International Code of Botanical Nomenclature" (Pringle, 1977), the present list departs from Fernald in this respect. Other exceptions include the following:

i) specific names of ferns and fern allies follow	Peck and Taylor (1980)
ii) Gramineae (grass family) follows	Dore and McNeill (1980)
iii) Cyperaceae (sedge family) follows	Voss (1972)
iv) Orchidaceae (orchid family) follows	Luer (1975)
v) shrub species follow	Soper and Heimburger (1982)
vi) Solidago & Euthamia species follow	Semple and Ringius (1983)
vii) Aster & Virgulus species follow	Reveal & Keener (1981)
viii) some common names follow	Gillett & White (1978)
ix) some scientific names and family delimitations follow	Webber (1984) who has used more taxonomically and nomenclaturally correct names than Fernald (1970). In such cases the Fernald synonym follows in parenthesis.

The symbols and abbreviations used in the list are defined below:

* after a plant name, indicates that the species is not native to North America as determined from the range descriptions in Fernald (1970). Most of these are European in origin.

P before a plant name, means a photograph (colour slide) is available for that taxon with the original report, in the files of the Ministry of Natural Resources, Aylmer District Office.

V before a plant name, means a voucher is available for that taxon in the Erindale Campus herbarium of the University of Toronto and/or the herbarium of the Department of Plant Sciences, University of Western Ontario, London.

auct. means "author". The plural form is "auctt." (authors).

ex between two authors' names, means the scientific name was first applied to the taxon so-named by the last-mentioned author but was first published by the former.

f. before a portion of a scientific name, means "form".

incl. means "included".

sp. at the end of a scientific name, means "species" in the singular.

spp. means "species" in the plural.

ssp. before a part of a scientific name, means "subspecies".

var. before a portion of a scientific name, means "variety".

APPENDIX A

	SCIENTIFIC NAME	COMMON NAME	COMMUNITIES OF OCCURRENCE
	LYCOPODIACEAE	CLUB-MOSS FAMILY	
V	Lycopodium annotinum L.	stiff club-moss	3c
V	L. dendroideum Michx. (= L. obscurum L. var. dendroideum (Michx.) D.C. Eat. ex A. Gray)	round-branched ground-pine	2,3,4,5
	L. digitatum A.Br. (= L. complanatum L. var. flabelliforme Fern.)	crowfoot club-moss	3,4,5
V	L. inundatum L.	bog club-moss	12
V	L. lucidulum Michx.	shining club-moss	2,3,4
	SELAGINELLACEAE	SPIKEMOSS FAMILY	
V	Selaginella eclipes Buck (incl. in S. apoda Fern.)	northern meadow spikemoss	11a,12
	EQUISETACEAE	HORSETAIL FAMILY	
V	Equisetum arvense L.	field horsetail	1,2,3,4,5,6,11,12
	E. fluviatile L.	water horsetail	3,5
V	E. sylvaticum L.	woodland horsetail	3,4,5
V	E. variegatum Schleich.	variegated scouring-rush	11
	OPHIOGLOSSACEAE	ADDER'S-TONGUE FAMILY	
	Botrychium virginianum (L.) Sw.	rattlesnake fern	1,2,3,5
	OSMUNDACEAE	FLOWERING FERN FAMILY	
	Osmunda cinnamomea L.	cinnamon fern	2,3,4,5,6
P,V	O. claytoniana L.	interrupted fern	3,5
	O. regalis L. var. spectabilis (Willd.) Gray	royal fern	3,4,5,6
	ADIANTACEAE (INCL. IN POLYPODIACEAE)	MAIDENHAIR FERN FAMILY	
	Adiantum pedatum L.	maidenhair fern	2,3,5
	DENNSTAEDTIACEAE (INCL. IN POLYPODIACEAE)	BRACKEN FAMILY	
	Pteridium aquilinum (L.) Kuhn var. latiusculum (Desv.) Underw.	eastern bracken	1,2,3,5,10,11,12

	THELYPTERIDACEAE (INCL. IN POLYPODIACEAE)	BEECH FERN FAMILY	
	Thelypteris noveboracensis (L.) Nieuwl.	New York fern	3,4
	T. palustris (Salisb.) Schott var. pubescens (Laws.) Fern.	marsh fern	3,4,5,6,7,8
	ASPLENIACEAE (INCL. IN POLYPODIACEAE)	SPLEENWORT FAMILY	
	Athyrium angustum (Willd.)Presl (= A. filix-femina (L.) Roth var. michauxii (Spreng.) Farw.)	northeastern lady fern	2,3,4,5
	Cystopteris bulbifera (L.) Bernh.	bulblet fern	3,4,5,6
V	C. fragilis (L.) Bernh.	fragile fern	3,5
V	Dryopteris clintoniana (D.C. Eat.) Dowell	Clinton's wood fern	3
	D. cristata (L.) Gray	crested wood fern	3,4,5,6
	D. marginalis (L.) Gray	marginal wood fern	1,2,3,4,5
V	D. spinulosa (O.F. Muell.) Watt	spinulose wood fern	1,2,3,4,5
V	Gymnocarpium dryopteris (L.) Newm. (= Dryopteris disjuncta (Ledeb.) C.V. Mort.)	oak fern	3,4,5
	Matteuccia struthiopteris (L.) Todaro var. pensylvanica (Willd.) Mort.	American ostrich fern	3,4,5
	Onoclea sensibilis L.	sensitive fern	2,3,4,5,6
	Polystichum acrostichoides (Michx.) Schott	Christmas fern	1,2,3,4,5
	TAXACEAE	YEW FAMILY	
	Taxus canadensis Marsh.	ground hemlock	2,3,4,5
	PINACEAE	PINE FAMILY	
	Larix decidua Mill.*	European larch (planted)	10
	L. laricina (DuRoi) K. Koch	tamarack	3,4,5,6
	Picea abies (L.) Karst.*	Norway spruce (planted)	10
	P. glauca (Moench) Voss	white spruce (planted)	3,10
V	Pinus resinosa Ait.	red pine (planted)	10
	P. strobus L.	white pine (some planted)	1,2,3,4,10
	P. sylvestris L.*	Scotch pine (planted)	10
	Tsuga canadensis (L.) Carr.	hemlock	2,3,4,5
	CUPRESSACEAE	CYPRESS FAMILY	
	Thuja occidentalis L.	eastern white cedar	2,3,4,5,6
	TYPHACEAE	CAT-TAIL FAMILY	
	Typha angustifolia L.	narrow-leaved cat-tail	3,6,7,11,12
	T. latifolia L.	common cat-tail	3,5,6,7,11,12

	SPARGANIACEAE	BUR-REED FAMILY	
V	Sparganium chlorocarpum Rydb.	green bur-reed	6a
V	S. minimum (Hartm.) Fries	small bur-reed	6a
	ZOSTERACEAE	PONDWEED FAMILY	
V	Potamogeton gramineus L.	variable pondweed	6a,8,9
	JUNCAGINACEAE	ARROW-GRASS FAMILY	
V	Triglochin maritimum L.	arrow-grass	11a
	ALISMATACEAE	WATER-PLANTAIN FAMILY	
V	Alisma plantago-aquatica L.	water-plantain	3,5,6,7,11,12
	Sagittaria latifolia Willd.	broad-leaved arrowhead	4,6,7,8,11
	POACEAE (= GRAMINEAE)	GRASS FAMILY	
	Agropyron repens (L.) Beauv.	couch grass	5,11
V	Agrostis gigantea Roth*	redtop	11
V	A. stolonifera L.	creeping bent grass	3,5,11
V	Alopecurus aequalis Sobol.	short awn foxtail	5b
V	Avena sativa L.*	oats	11
V	Brachyelytrum erectum (Schreber) Beauv. var. glabratum (Vasey ex Millsp.) T. Koyama & Kawano	bearded shorthusk	1,2,3,4,5
V	Bromus ciliatus L.	fringed brome grass	3,4,5
	B. inermis Leysser*	awnless brome grass	11
V	B. secalinus L.*	cheat, chess	11
V	Calamagrostis canadensis (Michaux) Nutt.	Canada blue-joint	5,6,7,11
V	C. inexpansa A. Gray	northern reed grass	6a
V	Cinna arundinacea L.	stout wood grass	3,4,5
V	C. latifolia (Trev.) Griseb.	drooping woodreed	3b
	Dactylis glomerata L.*	orchard grass	11
V	Danthonia spicata (L.) Beauv.	poverty oat grass	11,12
V	Deschampsia caespitosa (L.) Beauv. (typical var.)	tufted hair grass	11a
	Digitaria sanguinalis (L.) Scop.*	large crab grass	11
V	Echinochloa crusgalli (L.) Beauv.*	barnyard grass	11
V	E. wiegandii (Fassett) McNeill & Dore	western barnyard grass	11a
	Elymus hystrix L. (= Hystrix patula Moench.)	bottlebrush grass	1,2,3
V	E. virginicus L.	Virginia wild-rye	3,5
V	Eragrostis cilianensis (All.) Lutati ex Hubbard*	stink grass	11
V	E. frankii C.A. Meyer ex Steudel	Frank's love grass	11
V	E. minor Host*	little love grass	11

	Festuca arundinacea Schreber*	tall fescue	11
V	F. obtusa Biehler (typical form)	nodding fescue	3,4a
V	F. pratensis Hudson*	meadow fescue	11
V	F. rubra L.	red fescue	11
V	Glyceria borealis (Nash) Batchelder	northern manna grass	8
V	G. grandis S. Watson	tall manna grass	5,11
V	G. melicaria (Michaux) Hubbard	long manna grass	3,5
V	G. striata (Lam.) A.S. Hitchc. (typical var.)	fowl manna grass	3,4,5,6,11
V	G. striata (Lam.) A.S. Hitchc. var. stricta (Scribner) Fernald		11
V	Hierochloe odorata (L.) Beauv.	Indian sweet grass	11a
	Hordeum jubatum L.	foxtail barley	11
V	Leersia oryzoides (L.) Swartz	rice cut grass	3,4,5,6,7,11
	Lolium perenne L.*	perennial rye grass	11
V	Milium effusum L.	wood millet	2,3,5
V	Muhlenbergia glomerata (Willd.) Trin.	marsh wild-timothy	6a,8
V	M. mexicana (L.) Trin. (typical var.)	Mexican muhlenbergia	3,6,11,12
V	M. mexicana (L.) Trin. var. filiformis (Willd.) Scribner		3a
V	Oryzopsis asperifolia Michaux	rough-leaved mountain-rice	1,2,3,5
V	Panicum capillare L.	common witch grass	11
V	P. dichotomiflorum Michaux	fall panicum	11
V	P. lanuginosum Elliott var. implicatum (Scribner) Fernald	hairy panic grass	11,12
V	P. linearifolium Scribner (typical var.)	narrow-leaved panic grass	11,12
V	Phalaris arundinacea L.	reed canary grass	5,7,11
	Phleum pratense L.*	timothy	11
	Phragmites australis (Cav.) Trin. ex Steudel	common reed	11
V	Poa alsodes A. Gray	woodland poa	1,2,3,5
	P. annua L.*	annual blue grass	11
V	P. compressa L.*	Canada blue grass	1,2,11
V	P. languida A.S. Hitchc.	languid poa	3b
V	P. palustris L.	fowl meadow grass	3,6
V	P. pratensis L.	Kentucky blue grass	1,5,6,11
V	Puccinellia distans (Jacq.) Parl.*	reflexed saltmarsh grass	11
V	P. nuttalliana (Schultes) A.S. Hitchc.	Nuttall alkali grass	11a
V	Schizachne purpurascens (Torrey) Swallen var. pubescens Dore	false melic grass	3a,c
V	Secale cereale L.*	rye	11
	Setaria glauca (L.) Beauv.*	yellow foxtail	11
V	S. viridis (L.) Beauv.*	green foxtail	11

V	Sphenopholis intermedia (Rydb.) Rydb. (typical var.)	slender wedge grass	3,5
V	S. intermedia (Rydb.) Rydb. var. pilosa Dore		6a
V	Sporobolus asper (Michaux) Kunth	rough dropseed	11a
V	S. neglectus Nash	overlooked dropseed	11
V	S. vaginiflorus (Torrey) A. Wood var. inaequalis Fernald	ensheathed dropseed	11
	CYPERACEAE	SEDGE FAMILY	
V	Carex aquatilis Wahlenb. var. altior (Rydb.) Fern.	aquatic sedge	6a,8
	C. arctata Boott	compressed sedge	1,2,3,4,5
V	C. aurea Nutt.	golden sedge	11,12
V	C. bebbii (Bailey) Fern.	Bebb's sedge	3,5,6,11
	C. blanda Dewey	smooth sedge	1,2,5
	C. bromoides Willd.	brome-like sedge	3,4,5,6
V	C. canescens L.	hoary sedge	3,5,6
V	C. cephaloidea (Dewey) Dewey	head-like sedge	5
V	C. communis Bailey	common sedge	1,3,5
V	C. comosa Boott	bristly sedge	3,5,6,7,11
	C. convoluta Mack.	rolled up sedge	1,2,5
	C. crinita Lam.	fringed sedge	3,4,5
	C. cristatella Britton	crested sedge	3,4,5
V	C. deweyana Schwein.	Dewey's sedge	5
V	C. diandra Schrank	two-stamened sedge	4b,6a,11
V	C. disperma Dewey	two-seeded sedge	4a,5,6
	C. flava L.	yellow sedge	11
V	C. gracillima Schw.	filiform sedge	3,5,11,12
V	C. granularis Muhl. ex Willd.	granular sedge	4,11,12
V	C. hirtifolia Mack.	pubescent sedge	5e
V	C. hystericina Willd.	porcupine sedge	3,5,6,7
V	C. interior Bailey	inland sedge	3,4,5,6
V	C. intumescens Rudge	bladder sedge	3,4,5
V	C. lacustris Willd.	lake sedge	3,5,6,11
	C. laevivaginata (Kukenth.) Mack.	smooth-sheathed sedge	4b
V	C. lasiocarpa Ehrh. var. americana Fern.	woolly sedge	8
V	C. laxiflora Lam.	distant-flowered sedge	5d
V	C. leptalea Wahl.	bristle-stalked sedge	3,5
V	C. leptonervia Fern.	finely-nerved sedge	3,4,5,6
V	C. lupulina Muhl.	hop sedge	3,4,5
V	C. pallescens L.	pale sedge	11
V	C. paupercula Michx.	stunted sedge	6a,8
V	C. peckii Howe	Peck's sedge	3c
	C. pedunculata Willd.	peduncled sedge	1,2,3,4,5
V	C. pensylvanica Lam.	Pennsylvania sedge	1,3,5
V	C. praegracilis W. Boott	very slender sedge	11
V	C. prairea Dewey	prairie sedge	6a
V	C. pseudo-cyperus L.	cyperus-like sedge	3,5,6,7
V	C. retrorsa Schwein.	retrorse sedge	3,5,7
V	C. rosea Willd.	stellate sedge	5
V	C. rostrata Stokes	beaked sedge	11
V	C. scabrata Schw.	rough sedge	3,4,5,6

V	C. stipata Willd.	awl-fruited sedge	3,5,6
V	C. stricta Lam.	stiff sedge	5,7,8
V	C. tenera Dewey	slender sedge	1,5,11
V	C. tribuloides Wahl.	blunt-broom sedge	5
	C. trisperma Dewey	three-fruited sedge	4
V	C. vulpinoidea Michaux	fox sedge	3,5,6,7,11,12
V	Cyperus rivularis Kunth	shining or river cyperus	12
V	Dulichium arundinaceum (L.) Britton	three-way sedge	6a
V	Eleocharis compressa Sulliv.	flat-stemmed spike-rush	11a
V	E. erythropoda Steudel	red-based spike-rush	3,6,7,8,11
V	E. obtusa (Willd.) Schultes	blunt spike-rush	3,11
	Scirpus atrovirens Willd.	dark green bulrush	3,5,6,7,11,12
	S. cyperinus (L.) Kunth	wool-grass	3,5,6,7,11,12
	S. pendulus Muhl. (= S. lineatus Michx.)	reddish bulrush	4b,11,12
V	S. validus Vahl var. creber Fern.	softstem bulrush	7,11
	ARACEAE	ARUM FAMILY	
	Arisaema triphyllum (L.) Schott	jack-in-the-pulpit	2,3,4,5,6
V	Calla palustris L.	wild calla	6a,8
	Symplocarpus foetidus (L.) Nutt.	skunk cabbage	2,3,4,5,6,7
	LEMNACEAE	DUCKWEED FAMILY	
V	Lemna minor L.	lesser duckweed	3,4,5,6,7,11
V	L. trisulca L.	star duckweed	5,7,11
V	Spirodela polyrhiza (L.) Schleid.	greater duckweed	7
V	Wolffia columbiana Karst.	water-meal	7
V	W. punctata Griseb.	water-meal	7,11
	JUNCACEAE	RUSH FAMILY	
V	Juncus articulatus L.	jointed rush	3,6,12
V	J. balticus Willd.	Baltic rush	11a
V	J. bufonius L.	toad rush	11
V	J. dudleyi Wieg.	Dudley's rush	3,11,12
V	J. effusus L.	common rush	3,5,6,7,11,12
V	J. marginatus Rostk.	margined rush	12
V	J. nodosus L.	knotted rush	3,12
V	J. tenuis Willd.	path rush	1,2,3,4,11
	Luzula acuminata Raf.	pointed wood rush	1,2,3,4,5
V	L. multiflora (Retz.) Lej.	common wood rush	5d,12
	LILIACEAE	LILY FAMILY	
	Allium tricoccum Ait.	wild leek	1,2,5
	Asparagus officinalis L.*	garden asparagus	11,12
	Clintonia borealis (Ait.) Raf.	bluebead lily	3,4,5,6
	Erythronium americanum Ker	yellow trout lily	1,2,3,5
	Lilium michiganense Farw.	Michigan lily	3,5
	Maianthemum canadense Desf.	Canada mayflower	1,2,3,4,5,6
	Medeola virginiana L.	Indian cucumber-root	3,4,5

	Polygonatum pubescens (Willd.) Pursh	hairy Solomon's-seal	1,2,3,4,5
	Smilacina racemosa (L.) Desf.	false Solomon's-seal	1,2,3,4,5
	S. stellata (L.) Desf.	starry false Solomon's-seal	2,3,5
	S. trifolia (L.) Desf.	three-leaved false Solomon's-seal	3
V	Smilax herbacea L.	carrion-flower	5d
	S. tamnoides L. var. hispida (Muhl.) Fern.	bristly greenbrier	3,5
	Streptopus roseus Michx.	rose twistedstalk	2,3,4
	Trillium erectum L.	red trillium	3,4,5
	T. grandiflorum (Michx.) Salisb.	white trillium	1,2,3,4,5
V	Uvularia grandiflora Sm.	bellwort	5d
	IRIDACEAE	IRIS FAMILY	
V	Iris versicolor L.	blue flag	5
V	Sisyrinchium montanum Greene	blue-eyed-grass	11,12
	ORCHIDACEAE	ORCHIS FAMILY	
P	Calopogon tuberosus (L.) BSP. (= C. pulchellus (Salisb.) R. Br.)	grass-pink	8
P	Cypripedium calceolus L. var. parviflorum (Salisb.) Fern.	small yellow lady's-slipper	3,4,5,6
P	C. reginae Walt.	showy lady's-slipper	3,4,5,6
	Epipactis helleborine (L.) Crantz*	helleborine	1,2,3,4,5,10,11
	Galearis spectabilis (L.) Raf. (= Orchis spectabilis L.)	showy orchis	4b
P,V	Liparis loeselii (L.) Rich.	Loesel's twayblade	5,6,12
	Platanthera hyperborea (L.) Lindley	northern green orchid	3,11
P	P. lacera (Michx.) G. Don	ragged-fringed orchis	3,5,6
P	P. psycodes (L.) Spreng.	small purple-fringed orchis	3,4,5,6,12
P,V	Spiranthes cernua (L.) Rich.	nodding ladies'-tresses	11a,12
P,V	S. ochroleuca (Rydb. ex Britt.) Rydb.	yellow nodding ladies'-tresses	11a,12
	SALICACEAE	WILLOW FAMILY	
	Populus balsamifera L.	balsam poplar	3,4,5,6
	P. deltoides Marsh.	cottonwood	3,4,5
	P. grandidentata Michx.	large-toothed aspen	1,2,3,5
	P. tremuloides Michx.	trembling aspen	1,2,3,4,5,6,11,12
V	Salix alba L.*	white willow	5,11
V	S. amygdaloides Anderss.	peach-leaved willow	3,5
V	S. bebbiana Sarg.	Bebb's willow	3,5,6,12
V	S. discolor Muhl.	pussy willow	3,5,6,7
V	S. eriocephala Michx.	willow	5,6
	S. exigua Nutt. (= S. interior Rowlee)	sandbar willow	6
V	S. nigra Marsh.	black willow	3,5
V	S. petiolaris J.E. Sm.	slender willow	6

V	S. purpurea L.*	basket willow, purple osier	5,6
V	S. serissima (Bailey) Fern.	autumn willow	5,6
	JUGLANDACEAE	WALNUT FAMILY	
	Carya cordiformis (Wang.) K. Koch	bitternut hickory	5
	C. ovata (Mill.) K. Koch	shagbark hickory	2e,3
	Juglans nigra L.	black walnut (planted)	10,11
	BETULACEAE	BIRCH FAMILY	
	Betula alleghaniensis Britt. (= B. lutea auct., non Michx. f.)	yellow birch	2,3,4,5,6
	B. papyrifera Marsh.	white or paper birch	5e
	Carpinus caroliniana Walt.	blue beech	1,2,3,5
	FAGACEAE	BEECH FAMILY	
	Fagus grandifolia Ehrh.	American beech	1,2,3
	Quercus alba L.	white oak	2,3,5
	Q. macrocarpa Michx.	mossy-cup oak	3
	Q. rubra L.	red oak	1,2,3,5
	ULMACEAE	ELM FAMILY	
	Ulmus americana L.	white elm	2,3,4,5,6
	U. rubra Muhl.	red or slippery elm	3,5,6
	URTICACEAE	NETTLE FAMILY	
	Boehmeria cylindrica (L.) Sw.	false nettle	3,4,5,6
	Laportea canadensis (L.) Wedd.	wood nettle	2,3,5
	Pilea pumila (L.) Gray	clearweed	2,3,4,5,6
	Urtica dioica L. ssp. gracilis (Ait.) Selander (= U. procera Muhl. ex Willd.)	slender stinging nettle	5,6,7,11,12
	ARISTOLOCHIACEAE	BIRTHWORT FAMILY	
	Asarum canadense L.	wild ginger	1,2,3,4,5
	POLYGONACEAE	BUCKWHEAT FAMILY	
V	Bilderdykia convolvulus (L.) Dumort.*(= Polygonum convolvulus L.)	black bindweed, wild buckwheat	11
	Fagopyrum esculentum Moench*	buckwheat	11
V	Polygonum amphibium L. var. stipulaceum Coleman	water smartweed	6,11
V	P. hydropiper L.	common smartweed	5
V	P. hydropiperoides Michx.	mild water pepper	5,6a
V	P. monspeliense L.* (= P. aviculare L. in part)	prostrate knotweed	11
V	P. persicaria L.*	lady's thumb	11
V	P. punctatum Ell.	water smartweed	3,5,7,11
	P. scandens L.	climbing false buckwheat	11

	Rumex acetosella L.*	sheep sorrel	11,12
	R. crispus L.*	curled dock	11
	R. obtusifolius L.*	bitter dock	11
	R. verticillatus L.	water dock	5,6,7,11
	CHENOPODIACEAE	GOOSEFOOT FAMILY	
V	Atriplex hastata L.	halberd-leaved atriplex	11
	Chenopodium album L.*	lamb's-quarters	11
V	C. botrys L.*	Jerusalem-oak goosefoot	11a
	C. glaucum L.*	oak-leaved goosefoot	11
V	Kochia scoparia (L.) Schrader*	summer cypress	11
V	Salsola pestifer A. Nels. (= S. kali L. var. tenuifolia Tausch)	Russian thistle	11
	AMARANTHACEAE	AMARANTH FAMILY	
V	Amaranthus retroflexus L.*	redroot pigweed	11
	PORTULACACEAE	PURSLANE FAMILY	
	Claytonia virginica L.	spring beauty	1,2,5
	Portulaca oleracea L.*	purslane	11
	CARYOPHYLLACEAE	PINK FAMILY	
	Arenaria serpyllifolia L.*	thyme-leaved sandwort	11,12
	Cerastium fontanum Baumg. ssp. triviale (Link) Jalas* (= C. vulgatum L.)	mouse-eared chickweed	11
V	Dianthus armeria L.*	Deptford pink	11,12
	Saponaria officinalis L.*	bouncing bet	11,12
	Silene latifolia Poiret* (= Lychnis alba Mill.)	white cockle	11,12
	S. vulgaris (Moench) Garcke* (= S. cucubalus Wibel)	bladder campion	11
V	Stellaria calycantha (Ledeb.) Bong.	northern starwort	5b
V	S. longifolia Muhl.	long-leaved stitchwort	5
	S. media (L.) Cyrillo*	common chickweed	11
	NYMPHAEACEAE	WATER-LILY FAMILY	
V	Nuphar variegatum Engelm.	yellow pond lily	9
	RANUNCULACEAE	CROWFOOT FAMILY	
	Actaea pachypoda Ell.	white baneberry	1,2,5
	A. rubra (Ait.) Willd.	red baneberry	3,4,5
	Anemone canadensis L.	Canada anemone	11,12
	A. quinquefolia L.	wood anemone	1,5
V	A. riparia Fern.	riverbank anemone	2,3,5
	Aquilegia canadensis L.	columbine	1,5
	Caltha palustris L.	marsh-marigold	3,4,5,6,7
	Clematis virginiana L.	virgin's-bower	3,5,6,11

	Coptis groenlandica (Oeder) Fern.	goldthread	3,4,5,6
	Hepatica americana (DC.) Ker	round-lobed hepatica	5
	Ranunculus abortivus L.	kidney-leaf buttercup	1,2,3,5
	R. acris L.*	tall buttercup	11,12
V	R. pensylvanicus L. f.	bristly crowfoot	3
	R. recurvatus Poir.	hooked buttercup	1,2,3,4,5
V	R. sceleratus L.	cursed crowfoot	5,7
	R. septentrionalis Poir.	swamp buttercup	5
	Thalictrum dioicum L.	early meadow rue	1,2,5
	T. pubescens Pursh var. hebecarpon (Fern.) Boivin (= T. polygamum Muhl.)	tall meadow rue	3,5,6,7,11
	BERBERIDACEAE	BARBERRY FAMILY	
	Berberis vulgaris L.*	common barberry	3,5,12
	Caulophyllum thalictroides (L.) Michx.	blue cohosh	1,5
	Podophyllum peltatum L.	May-apple	1,2,3,5,11
	LAURACEAE	LAUREL FAMILY	
P	Lindera benzoin (L.) Blume	spicebush	3,4,5,6
	PAPAVERACEAE	POPPY FAMILY	
	Sanguinaria canadensis L.	bloodroot	1,3,5,11
	FUMARIACEAE	FUMITORY FAMILY	
	Dicentra cucullaria (L.) Bernh.	Dutchman's-breeches	1
	BRASSICACEAE (=CRUCIFERAE)	MUSTARD FAMILY	
	Alliaria petiolata (M. Bieb.) Cavara & Grande* (= A. officinalis Andrz. ex Bieb.)	garlic mustard	3
	Barbarea vulgaris R. Br.*	yellow rocket, winter cress	5,11,12
	Capsella bursa-pastoris (L.) Medic.*	shepherd's purse	11
	Cardamine bulbosa (Schreb.) BSP.	spring cress	3,5
V	C. douglassii (Torr.) Britt.	purple cress	3c,5d,6b
V	C. pensylvanica Muhl.	Pennsylvania bitter cress	3,4,5,6
	Dentaria diphylla Michx.	toothwort	3,5
V	Descurainia sophia (L.) Webb ex Prantl*	flixweed	11
V	Erucastrum gallicum (Willd.) O.E. Schulz*	dog mustard	11
	Erysimum cheiranthoides L.*	wormseed mustard	11,12
	Hesperis matronalis L.*	dame's rocket	12
	Lepidium campestre (L.) R. Br.*	field pepper-grass	11
	L. densiflorum Schrad.*	common pepper-grass	11
	Nasturtium microphyllum (Boenn.) Reichenb.	water cress	3,5,6,7,11

	"Most records of the introduced N. officinale in this region are referrable to this species (pers. comm. P.W. Ball)." (Webber, 1984)		
V	Rorippa palustris (L.) Besser ssp. hispida (Desv.) Jonsell (= R. islandica (Oeder) Borbas var. hispida (Desv.) Butt. & Abbe)	marsh yellow cress	5,7,11
	Sinapis arvensis L.* (= Brassica kaber (DC.) L.C. Wheeler var. pinnatifida (Stokes) L.C. Wheeler)	wild mustard	11
	Thlaspi arvense L.*	pennycress, stinkweed	11
	SARRACENIACEAE	PITCHER-PLANT FAMILY	
P	Sarracenia purpurea L.	pitcher-plant	8
	DROSERACEAE	SUNDEW FAMILY	
V	Drosera rotundifolia L.	round-leaved sundew	5,8
	SAXIFRAGACEAE	SAXIFRAGE FAMILY	
V	Chrysosplenium americanum Schwein.	water-mat	3,4,5,6
	Mitella diphylla L.	mitrewort	3,4,5,6
P	M. nuda L.	naked mitrewort	3,4,5
	Ribes americanum Mill.	wild black currant	3,4,5,6
	R. cynosbati L.	prickly gooseberry	2,3,5
V	R. hirtellum Michx.	smooth gooseberry	3,4,5,6
V	R. odoratum Wendl. fil.	buffalo currant	11
V	R. triste Pall.	swamp red currant	3,5,6
	Tiarella cordifolia L.	foamflower	1,2,3,4,5
	HAMAMELIDACEAE	WITCH-HAZEL FAMILY	
	Hamamelis virginiana L.	witch-hazel	1,2,3,4,5
	ROSACEAE	ROSE FAMILY	
V	Agrimonia gryposepala Wallr.	agrimony	1,2,3,4,5,
V	Amelanchier arborea (Michx.f.) Fern.	serviceberry	1,3,6
V	A. laevis Wieg.	smooth serviceberry	3b,5d
V	A. sanguinea (Pursh) DC.	shadbush, serviceberry	5e
V	Aronia melanocarpa (Michx.) Ell.	chokeberry	6a,8
V	Crataegus flabellata (Spach) Kirchn.	fan-shaped hawthorn	5d
V	C. punctata Jacq.	dotted thorn	5d
	Fragaria virginiana Duchesne	wild strawberry	1,2,3,5,6,11
V	Geum aleppicum Jacq. var. strictum (Ait.) Fern.	yellow avens	3,5
	G. canadense Jacq.	white avens	1,2,3,5
V	G. laciniatum Murr.	cut-leaf avens	3,5
	G. rivale L.	water avens, purple avens	4b,5
V	Malus coronaria (L.) Mill.	wild crabapple	3,5

	M. domestica Borkh.* (= Pyrus malus L.)	apple	1,3,5,11
	Physocarpus opulifolius (L.) Maxim.	ninebark	3
	Potentilla norvegica L.*	rough cinquefoil	11
V	P. palustris (L.) Scop.	marsh cinquefoil	6a,8
	P. recta L.*	rough-fruited cinquefoil	11,12
V	P. simplex Michx.	common cinquefoil	3,11,12
	Prunus pensylvanica L.f.	pin cherry	1,2,3,5,6
	P. serotina Ehr.	black cherry	1,2,3,4,5
	P. virginiana L.	choke cherry	2,3,4,5,6,11
	Rosa blanda Ait.	smooth rose	11
V	R. multiflora Thunb.*	multiflora rose	3,12
	R. palustris Marsh.	swamp rose	5,6,8
	Rubus allegheniensis Porter	blackberry	2,3,5,11,12
V	R. flagellaris Willd.	northern dewberry	3,6a
	R. idaeus L. var. strigosus (Michx.) Maxim.	wild red raspberry	1,2,3,5,6,10, 11,12
	R. occidentalis L.	black raspberry	3,5,11
	R. pubescens Raf.	dwarf swamp raspberry	3,4,5,6
	Spiraea alba DuRoi	narrow-leaved meadowsweet	3,5,6,7,8,12
	FABACEAE (=LEGUMINOSAE)	BEAN OR PEA FAMILY	
	Amphicarpa bracteata (L.) Fern.	hog-peanut	3,5
	Desmodium canadense (L.) DC.	showy tick-trefoil	3,11
V	Lotus corniculatus L.*	bird's-foot trefoil	11,12
	Medicago lupulina L.*	black medick	11
	M. sativa L.*	alfalfa, Lucerne	11
	Melilotus alba Desr.*	white sweet-clover	11,12
	M. officinalis (L.) Lam.*	yellow sweet-clover	11
	Trifolium hybridum L.*	alsike clover	11
	T. pratense L.*	red clover	5,11
	T. repens L.*	white clover	11
	Vicia cracca L.*	tufted vetch	11,12
	OXALIDACEAE	WOOD-SORREL FAMILY	
	Oxalis europaea Jordan	yellow wood-sorrel	11
	GERANIACEAE	GERANIUM FAMILY	
P	Geranium maculatum L.	wild geranium	1,2,5
	G. robertianum L.	herb Robert	1,2,3,5
	POLYGALACEAE	MILKWORT FAMILY	
V	Polygala paucifolia Willd.	fringed polygala	3,4,5
	EUPHORBIACEAE	SPURGE FAMILY	
	Acalypha rhomboidea Raf.	three-seeded mercury	11
V	Euphorbia glyptosperma Engelm.	engraved-seed spurge	11
V	E. supina Raf.	milk-purslane	11
V	E. vermiculata Raf.	hairy-stemmed spurge	11

	ANACARDIACEAE	CASHEW FAMILY	
V	Rhus glabra L.	smooth sumac	12
	R. radicans L.	poison ivy	1,2,3,4,5,6,11,12
	R. typhina L.	staghorn sumac	5,12
	R. vernix L.	poison sumac	3,4b,6a,8
	AQUIFOLIACEAE	HOLLY FAMILY	
	Ilex verticillata (L.) Gray	winterberry	3,4,5,6a
	Nemopanthus mucronata (L.) Trel.	mountain-holly	5,6a
	CELASTRACEAE	STAFF-TREE FAMILY	
	Celastrus scandens L.	climbing bittersweet	3,5,11,12
	Euonymus obovatus Nutt.	running strawberry bush	1,2,3,5
	ACERACEAE	MAPLE FAMILY	
	Acer negundo L.	Manitoba maple	11
V	A. rubrum L.	red maple	2,3,4,5,6
V	A. saccharinum L.	silver maple	2,3,5,6
	A. saccharum Marsh.	sugar maple	1,2,3,5
	A. spicatum Lam.	mountain maple	3,4,5
	BALSAMINACEAE	TOUCH-ME-NOT FAMILY	
	Impatiens capensis Meerb.	spotted touch-me-not	3,4,5,6,7,11,12
	RHAMNACEAE	BUCKTHORN FAMILY	
	Frangula alnus Mill.* (= Rhamnus frangula L.)	alder buckthorn	3,4,5,6
	Rhamnus alnifolia L'Her.	alder-leaved buckthorn	3,5,6
	R. cathartica L.*	common buckthorn	1,3,4,5,11,12
	VITACEAE	VINE FAMILY	
	Parthenocissus inserta (Kerner) K. Fritsch	Virginia creeper	1,2,3,4,5,6
	Vitis riparia Michx.	riverbank grape	2,3,4,5,6
	TILIACEAE	LINDEN FAMILY	
	Tilia americana L.	basswood	1,2,3,5,6
	MALVACEAE	MALLOW FAMILY	
	Malva neglecta Wallr.*	common mallow	11
	CLUSIACEAE (=GUTTIFERAE)	ST. JOHN'S-WORT FAMILY	
V	Hypericum canadense L.	Canada St. John's-wort	11,12
	H. perforatum L.*	common St. John's-wort	11,12
V	H. punctatum Lam.	spotted St. John's-wort	1,3,4,5

V	Triadenum fraseri (Spach) Gl. (= T. virginicum L. var. fraseri (Spach) Fern.)	marsh St. John's-wort	8
	VIOLACEAE	VIOLET FAMILY	
V	Viola arvensis Murr.*	wild pansy	11
	V. canadensis L.	Canada violet	2
V	V. conspersa Reichenb.	dog violet	1,2,3,5
V	V. cucullata Ait.	marsh blue violet	3,4,5,6
V	V. fimbriatula Sm.	northern downy violet	12
	V. papilionacea Pursh	common blue violet	5
	V. pubescens Ait. (typical var.)	downy yellow violet	1,2,3,5
V	V. pubescens Ait. var. scabriuscula T. & G.	smooth yellow violet	5
V	V. renifolia Gray	kidney-leaved violet	3,5,6a
	V. rostrata Pursh	long-spurred violet	1,3,5
V	V. sororia Willd.	woolly blue violet	2,5
	ONAGRACEAE	EVENING-PRIMROSE FAMILY	
V	Circaea alpina L.	small enchanter's nightshade	4
	C. quadrisulcata (Maxim.) Franch & Sav.	enchanter's nightshade	1,2,3,4,5
	Epilobium angustifolium L.	fireweed	12
V	E. ciliatum Raf. (= E. glandulosum Lehm. var. adenocaulon (Haussk.) Fern.)	sticky willow-herb	3,5,6
V	E. hirsutum L.*	hairy willow-herb	11
V	E. leptophyllum Raf.	narrow-leaved willow-herb	5,6a,11
V	E. strictum Muhl.	downy willow-herb	6a
V	Ludwigia palustris (L.) Ell. var. americana (DC.) Fern. & Grisc.	water-purslane	3,5,6,7,11
	Oenothera parviflora L.	small-flowered evening-primrose	11,12
V	O. perennis L.	sundrops	11,12
	HALORAGACEAE	WATER-MILFOIL FAMILY	
V	Proserpinaca palustris L.	mermaid-weed	5,6a
	ARALIACEAE	GINSENG FAMILY	
	Aralia nudicaulis L.	wild sarsaparilla	2,3,4,5,6
	A. racemosa L.	spikenard	3,4
P,V	Panax trifolius L.	dwarf ginseng	5d
	APIACEAE (=UMBELLIFERAE)	PARSLEY FAMILY	
	Angelica atropurpurea L.	angelica	6
	Cicuta bulbifera L.	bulb-bearing water-hemlock	3,4,5,6,7,11
	C. maculata L.	water-hemlock	3,4,5,6
	Daucus carota L.*	wild carrot	11

V	Hydrocotyle americana L.	water or marsh pennywort	3,6,12
	Osmorhiza claytoni (Michx.) C.B. Clarke	sweet cicely	3,5
V	Sanicula marilandica L.	black snakeroot	2,3,4,5
	Sium suave Walt.	water-parsnip	3,5,6
	CORNACEAE	DOGWOOD FAMILY	
	Cornus alternifolia L.f.	alternate-leaved dogwood	1,2,3,4,5
	C. canadensis L.	bunchberry	3,4,5,6
	C. obliqua Raf.	silky dogwood	5
V	C. racemosa Lam.	grey dogwood	3,5,6,11,12
	C. stolonifera Michx.	red-osier dogwood	3,5,6,7,11,12
	PYROLACEAE	WINTERGREEN FAMILY	
	Monotropa uniflora L.	Indian-pipe	2
V	Pyrola asarifolia Michx. var. purpurea (Bunge) Fern.	pink pyrola	6a
	P. elliptica Nutt.	shinleaf	3,4
	ERICACEAE	HEATH FAMILY	
	Gaultheria procumbens L.	aromatic wintergreen	3,4,6a
	Gaylussacia baccata (Wang.) K. Koch	black huckleberry	6a,8
V	Vaccinium angustifolium Ait.	low sweet blueberry	3,5,8
V	V. corymbosum L.	high-bush blueberry	4b,6a
V	V. macrocarpon Ait.	large cranberry	8
V	V. myrtilloides Michx.	velvet-leaf blueberry	4,6a
	PRIMULACEAE	PRIMROSE FAMILY	
	Lysimachia ciliata L.	fringed loosestrife	3,4,5,6
V	L. thyrsiflora L.	tufted loosestrife	3,4,5,6
	Trientalis borealis Raf.	starflower	3,4,5,6
	OLEACEAE	OLIVE FAMILY	
	Fraxinus americana L.	white ash	1,2,3,5
V	F. nigra Marsh.	black ash	2,3,4,5,6
V	F. pennsylvanica Marsh. (typical var.)	red ash	3
V	F. pennsylvanica Marsh. var. subintegerrima (Vahl) Fern.	green ash	3,5
	GENTIANACEAE	GENTIAN FAMILY	
V	Gentiana andrewsii Griseb.	closed gentian	12
V	Halenia deflexa (Sm.) Griseb.	spurred gentian	3a
V	Menyanthes trifoliata L. var. minor Raf.	buckbean	8
	APOCYNACEAE	DOGBANE FAMILY	
	Apocynum androsaemifolium L.	spreading dogbane	1,3,11

	A. cannabinum L.	Indian hemp	11
V	A. sibiricum Jacq. var. cordigerum (Greene) Fern.	heart-leaved Indian hemp	12
	ASCLEPIADACEAE	MILKWEED FAMILY	
	Asclepias incarnata L.	swamp milkweed	3,5,6,7,11,12
	A. syriaca L.	common milkweed	11,12
	CONVOLVULACEAE	MORNING-GLORY FAMILY	
	Calystegia sepium (L.) R. Br.* (= Convolvulus sepium L.)	hedge bindweed	11
	Convolvulus arvensis L.*	field bindweed	11
V	Cuscuta gronovii Willd.	swamp dodder	3,4,5,6,7
	HYDROPHYLLACEAE	WATERLEAF FAMILY	
	Hydrophyllum virginianum L.	Virginia waterleaf	1,5
	BORAGINACEAE	BORAGE FAMILY	
	Echium vulgare L.*	viper's-bugloss, blueweed	11,12
V	Myosotis laxa Lehm.	smaller forget-me-not	3,11
	VERBENACEAE	VERVAIN FAMILY	
	Verbena hastata L.	blue vervain	5,6,7,12
	V. urticifolia L.	white vervain	3,5,11
	LAMIACEAE (=LABIATAE)	MINT FAMILY	
V	Collinsonia canadensis L.	horsebalm	2,3
V	Lamium purpureum L.*	purple dead-nettle	11
	Leonurus cardiaca L.*	motherwort	5,11
	Lycopus americanus Muhl.	cut-leaved water-horehound	3,5,6,7
	L. uniflorus Michx.	bugleweed	3,5,6
V	Mentha arvensis L.	wild mint	5
	Monarda fistulosa L.	wild bergamot	11
	Nepeta cataria L.*	catnip	11
	Prunella vulgaris L. var. lanceolata (Bart.) Fern.	heal-all, selfheal	1,2,3,5,11
	Satureja vulgaris (L.) Fritsch var. neogaea Fern.	wild basil	1,3,5,11
	Scutellaria galericulata L. (= S. epilobiifolia A. Hamilton)	common skullcap	5,6,7
	S. lateriflora L.	mad-dog skullcap	3,5,6
	SOLANACEAE	NIGHTSHADE FAMILY	
	Physalis heterophylla Nees	clammy ground-cherry	11,12
V	Solanum americanum Mill. (= S. nigrum L. var. americanum (Mill.) Schulz)	black nightshade	11
	S. dulcamara L.*	climbing nightshade	3,4,5,6,7,8,10,11,12

V	S. dulcamara L. f. albiflorum House*	(white-flowered form)	12
	SCROPHULARIACEAE	FIGWORT FAMILY	
V	Chaenorrhinum minus (L.) Lange*	dwarf snapdragon	11
	Chelone glabra L.	turtlehead	3,4,5,6,11,12
	Linaria vulgaris Hill*	toadflax	11,12
	Mimulus ringens L.	square-stemmed monkeyflower	5,7
V	Pedicularis canadensis L.	wood-betony, common lousewort	12
	Verbascum thapsus L.*	common mullein	11
V	Veronica agrestis L.*	field speedwell	11
	V. americana (Raf.) Schwein.	American brooklime	3,11
V	V. arvensis L.*	corn speedwell	11
	V. officinalis L.	common speedwell	1,2,5
	V. serpyllifolia L.*	thyme-leaved speedwell	1,11
	LENTIBULARIACEAE	BLADDERWORT FAMILY	
V	Utricularia vulgaris L.	common bladderwort	6a
	PHRYMACEAE	LOPSEED FAMILY	
	Phryma leptostachya L.	lopseed	2,3,5
	PLANTAGINACEAE	PLANTAIN FAMILY	
	Plantago lanceolata L.*	English plantain	11
	P. major L.*	common plantain	2,11
	P. rugelii Dcne.	Rugel's plantain	1,2,3,5,11
	RUBIACEAE	MADDER FAMILY	
V	Galium aparine L.	cleavers	2
V	G. asprellum Michx.	rough bedstraw	3,5,6,7
V	G. circaezans Michx.	wild licorice	2,3
V	G. palustre L.	marsh bedstraw	3,4,5,6,7
V	G. trifidum L.	three-cleft bedstraw	6
	G. triflorum Michx.	sweet-scented bedstraw	1,3,4,5,6
	Mitchella repens L.	partridge-berry	2,3,4,5,6
	CAPRIFOLIACEAE	HONEYSUCKLE FAMILY	
	Diervilla lonicera Mill.	northern bush-honeysuckle	2,11
V	Linnaea borealis L.	twinflower	4,6a
V	Lonicera canadensis Bartr.	fly honeysuckle	2,3,4,5
V	L. dioica L.	limber honeysuckle	1,3,4,5,6
V	L. oblongifolia (Goldie) Hook.	swamp fly honeysuckle	3,6a
	Sambucus canadensis L.	common elderberry	2,3,5,6
	S. pubens Michx.	red-berried elder	1,2,3,5
	Triosteum aurantiacum Bickn.	wild coffee	2,4,5,12
	Viburnum acerifolium L.	maple-leaved viburnum	1,3,4,5
V	V. cassinoides L.	wild raisin	6b
	V. lentago L.	nannyberry	3,4,5,6
	V. rafinesquianum Schult.	downy arrow-wood	5

V	V. trilobum Marsh.	high-bush cranberry	3,5,6
	DIPSACACEAE	TEASEL FAMILY	
	Dipsacus fullonum L.* (= D. sylvestris auctt. Amer., non Huds.)	teasel	11,12
	CUCURBITACEAE	GOURD FAMILY	
	Echinocystis lobata (Michx.) T. & G.	wild cucumber	3,5,6,11
	CAMPANULACEAE	BLUEBELL FAMILY	
V	Campanula aparinoides Pursh var. uliginosa (Rydb.) Gl. (= C. uliginosa Rydb.)	marsh-bellflower	6a,11
	Lobelia inflata L.	Indian tobacco	2,3,5
	L. siphilitica L.	great lobelia	3,4,5
	ASTERACEAE (=COMPOSITAE)	ASTER OR COMPOSITE FAMILY	
	Achillea millefolium L.*	common yarrow	11,12
	Ambrosia artemisiifolia L.	common ragweed	11
	Antennaria neglecta Greene	field pussytoes	11,12
V	A. plantaginifolia (L.) Richards.	plantain-leaved pussytoes	2,11
	Anthemis cotula L.*	stinking mayweed	11
	Arctium minus (Hill) Bernh.*	common burdock	11
V	Artemisia biennis Willd.*	biennial wormwood	11
V	Aster borealis (T. & G.) Prov. (= A. junciformis Rydb.)	bog aster	8
	A. cordifolius L.	heart-leaved aster	2
V	A. lanceolatus Willd. (incl. A. simplex Willd.)	tall white aster	11
V	A. lateriflorus (L.) Britt.	calico aster	1,2,3,4,5,11
	A. macrophyllus L.	large-leaved aster	2,4
	A. puniceus L.	purple-stemmed aster	3,4,5,6
	A. sagittifolius Wedemeyer	arrow-leaved aster	2,11
	Bidens cernua L.	nodding beggarticks	3,4,5,6,7,11
V	B. connata Muhl. var. petiolata (Nutt.) Farw.	swamp beggarticks	3,5,6
V	B. discoidea (T. & G.) Britt.	small beggarticks	5b
	B. frondosa L.	sticktight	3,5,6,7,11
	Centaurea vochinensis Bernh*	tyrol knapweed	11,12
	Chrysanthemum leucanthemum L.*	ox-eye daisy	11
	Cichorium intybus L.*	chicory	11,12
	Cirsium arvense (L.) Scop.*	Canada thistle	11
V	C. muticum Michx.	swamp thistle	3,4,5,12
	C. vulgare (Savi) Tenore*	bull thistle	11
	Conyza canadensis (L.) Cronq. (= Erigeron canadensis L.)	horseweed	11,12
V	Erechtites hieracifolia (L.) Raf.	pilewort	11
	Erigeron annuus (L.) Pers.	daisy fleabane	11,12

V	E. philadelphicus L.	Philadelphia fleabane	1,3,5,11
	E. strigosus Muhl. ex Willd.	narrow-leaved fleabane	11
	Eupatorium maculatum L.	spotted Joe-Pye-weed	3,5,6,7,11,12
	E. perfoliatum L.	boneset	3,5,6,7,11,12
V	E. purpureum L.	sweet Joe-Pye-weed	3a
	E. rugosum Houtt.	white snakeroot	1,2,4,5
	Euthamia graminifolia (L.) Nutt. (= Solidago graminifolia (L.) Salisb.)	grass-leaved goldenrod	4b,11,12
V	Galinsoga quadriradiata Ruiz & Pavon* (= G. ciliata (Raf.) Blake)	hairy galinsoga	11
V	Gnaphalium obtusifolium L.	catfoot, sweet everlasting	11,12
V	G. viscosum Humb., Bonpl. & Kunth (= G. macounii Greene)	clammy everlasting	12
	Helianthus annuus L.*	common sunflower	11
	Hieracium aurantiacum L.*	orange hawkweed	12
	H. pilosella L.*	mouse-eared hawkweed	11
V	H. piloselloides Vill.* (= H. florentinum All.)	king devil	11
V	H. scabrum Michx.	rough hawkweed	4b
	Inula helenium L.	elecampane	11
	Lactuca biennis (Moench) Fern.	tall blue lettuce	5,11
	L. canadensis L.	Canada lettuce	11
V	L. scariola L.*	prickly lettuce	11,12
	Matricaria matricarioides (Less.) Porter*	pineapple weed	11
	Prenanthes altissima L.	tall white lettuce	1,2,3,4,5
	Rudbeckia hirta L. (= R. serotina Nutt.)	black-eyed Susan	11,12
	R. laciniata L.	green-headed coneflower	5,12
	Senecio aureus L.	golden ragwort	3,4,5,6,12
V	S. vulgaris L.*	common groundsel	11
	Solidago canadensis L.	Canada goldenrod	5,11,12
	S. flexicaulis L.	zigzag goldenrod	1,2,5
	S. gigantea Ait.	tall goldenrod	5
V	S. juncea Ait.	early goldenrod	11,12
V	S. nemoralis Ait.	gray goldenrod	11,12
	S. patula Muhl.	rough-leaved goldenrod	3,4,5,6
	S. rugosa Mill.	rough-stemmed goldenrod	3,4,5,6
V	S. uliginosa Nutt.	bog goldenrod	8
	Sonchus arvensis L.*	perennial sow-thistle	11
V	S. asper (L.) Hill*	spiny annual sow-thistle	11
	Taraxacum officinale Weber*	common dandelion	1,3,10,11
	Tragopogon dubius Scop.* (= T. major Jacq.)	goat's-beard	11
	T. pratensis L.*	meadow goat's-beard	11
	Tussilago farfara L.*	coltsfoot	12
V	Virgulis ericoides (L.) Reveal & Keener (= Aster ericoides L.)	heath aster	11
	V. novae-angliae (L.) Reveal & Keener (= Aster novae-angliae L.)	New England aster	11,12

APPENDIX B: BIRDS OF THE DORCHESTER SWAMP AREA OF NATURAL AND SCIENTIFIC INTEREST

Nomenclature and taxonomic order follow the sixth edition of the Checklist of North American Birds (1983) prepared by the committee on classification and nomenclature of the American Ornithologists' Union. The 87 species listed were observed by the author within the study area at some time from April 20 to October 13, 1985 except where otherwise noted.

Seasonal occurrence is denoted by one of the following:

P - permanent resident	(21 species)	} breeders
S - summer resident	(56 species)	
W - winter resident	(3 species, very incomplete)	
M - migrant	(7 species)	

Breeding status was determined for both permanent and summer residents within the following four broad categories as defined by Eagles and Cadman (1981):

O - species observed in breeding season	(3 species)
PO - possible breeding	(30 species)
PR - probable breeding	(29 species)
CO - confirmed breeding	(13 species)
observed outside of breeding season	(2 species)

A measure of the temporal frequency of occurrence (not necessarily abundance) of a species, is expressed as a percentage of the 19 days spent within the study site for which the presence of that species was recorded.

APPENDIX B (Cont'd.)

SCIENTIFIC NAME	COMMON NAME	SEASONAL OCCURRENCE	BREEDING STATUS	FREQUENCY OF OCCURRENCE (% of days present of 19 days area visited)
Ardea herodias Linnaeus	Great Blue Heron	S	CO	26
Butorides striatus (Linnaeus)	Green-backed Heron	S	PR	11
Branta canadensis (Linnaeus)	Canada Goose	S	PR	16
Aix sponsa (Linnaeus)	Wood Duck	S	PR	5
Anas platyrhynchos Linnaeus	Mallard	P	CO	16
Cathartes aura (Linnaeus)	Turkey Vulture	S	PO	16
Buteo jamaicensis (Gmelin)	Red-tailed Hawk	P	PO	11
Falco sparverius Linnaeus	American Kestrel	P		1976 winter sighting
Bonasa umbellus (Linnaeus)	Ruffed Grouse	P	PR	21
Charadrius vociferus Linnaeus	Killdeer	S	PR	16
Actitis macularia (Linnaeus)	Spotted Sandpiper	S	PO	5
Gallinago gallinago (Linnaeus)	Common Snipe	S	PO	11
Scolopax minor Gmelin	American Woodcock	S	PO	11
Columba livia Gmelin	Rock Dove	P	O	5
Zenaida macroura (Linnaeus)	Mourning Dove	P	CO	47
Chordeiles minor (Forster)	Common Nighthawk	S	PO	5
Archilochus colubris (Linnaeus)	Ruby-throated Hummingbird	S	PO	5
Ceryle alcyon (Linnaeus)	Belted Kingfisher	S	O	11
Melanerpes erythrocephalus (Linnaeus)	Red-headed Woodpecker	S	PO	(1981)
Picoides pubescens (Linnaeus)	Downy Woodpecker	P	PR	37
Picoides villosus (Linnaeus)	Hairy Woodpecker	P	PO	11
Colaptes auratus (Linnaeus)	Northern Flicker	S	PR	53
Contopus virens (Linnaeus)	Eastern Wood-Pewee	S	PO	16
Empidonax traillii (Audubon)	Willow Flycatcher	S	PO	5
Empidonax minimus (Baird and Baird)	Least Flycatcher	S	PO	11
Myiarchus crinitus (Linnaeus)	Great Crested Flycatcher	S	PR	47
Tyrannus tyrannus (Linnaeus)	Eastern Kingbird	S	CO	37
Eremophila alpestris (Linnaeus)	Horned Lark	P	PO	5
Tachycineta bicolor (Vieillot)	Tree Swallow	S	CO	26
Riparia riparia (Linnaeus)	Bank Swallow	S	O	5
Hirundo pyrrhonota Vieillot	Cliff Swallow	S	PO	5

APPENDIX B (Cont'd.)

SCIENTIFIC NAME	COMMON NAME	SEASONAL OCCURRENCE	BREEDING STATUS	FREQUENCY OF OCCURRENCE (% of days present of 19 days area visited)
Hirundo rustica Linnaeus	Barn Swallow	S	PO	37
Cyanocitta cristata (Linnaeus)	Blue Jay	P	PR	63
Corvus brachyrhynchos Brehm	American Crow	P	PR	58
Parus atricapillus Linnaeus	Black-capped Chickadee	P	PR	89
Sitta canadensis Linnaeus	Red-breasted Nuthatch	M		5
Sitta carolinensis Latham	White-breasted Nuthatch	P	PR	11
Certhia americana Bonaparte	Brown Creeper	P	PO	11
Troglodytes aedon Vieillot	House Wren	S	CO	47
Troglodytes troglodytes (Linnaeus)	Winter Wren	W		5
Regulus satrapa Lichtenstein	Golden-crowned Kinglet	M		5
Regulus calendula (Linnaeus)	Ruby-crowned Kinglet	M		5
Polioptila caerulea (Linnaeus)	Blue-gray Gnatcatcher	S	PO	5
Sialia sialis (Linnaeus)	Eastern Bluebird	S	(flock of 13 birds observed Oct. 13/85)	5
Catharus fuscescens (Stephens)	Veery	S	PR	21
Hylocichla mustelina (Gmelin)	Wood Thrush	S	PO	5
Turdus migratorius Linnaeus	American Robin	S	CO	84
Dumetella carolinensis (Linnaeus)	Gray Catbird	S	PR	68
Toxostoma rufum (Linnaeus)	Brown Thrasher	S	PO	5
Bombycilla cedrorum Vieillot	Cedar Waxwing	P	PR	68
Sturnus vulgaris Linnaeus	European Starling	P	CO	26
Vireo flavifrons Vieillot	Yellow-throated Vireo	S	PO	(1983)
Vireo gilvus (Vieillot)	Warbling Vireo	S	PR	26
Vireo olivaceus (Linnaeus)	Red-eyed Vireo	S	PR	11
Vermivora pinus (Linnaeus)	Blue-winged Warbler	S	PO	5
Vermivora chrysoptera (Linnaeus)	Golden-winged Warbler	S	PR	1983 (pair present)
Dendroica petechia (Linnaeus)	Yellow Warbler	S	CO	47
Dendroica coronata (Linnaeus)	Yellow-rumped Warbler	M		5
Dendroica virens (Gmelin)	Black-throated Green Warbler	M		5
Dendroica castanea (Wilson)	Bay-breasted Warbler	M		5
Setophaga ruticilla (Linnaeus)	American Redstart	S	CO	16
Seiurus aurocapillus (Linnaeus)	Ovenbird	S	PR	26

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APPENDIX B (Cont'd.)

SCIENTIFIC NAME	COMMON NAME	SEASONAL OCCURRENCE	BREEDING STATUS	FREQUENCY OF OCCURRENCE (% of days present of 19 days area visited)
Seiurus novaboracensis (Gmelin)	Northern Waterthrush	S	PO	11
Geothlypis trichas (Linnaeus)	Common Yellowthroat	S	PR	63
Wilsonia pusilla (Wilson)	Wilson's Warbler	M		5
Piranga olivacea (Gmelin)	Scarlet Tanger	S	PO	(Small & McBurney, 1977)
Cardinalis cardinalis (Linnaeus)	Northern Cardinal	P	PR	53
Pheuticus ludovicianus (Linnaeus)	Rose-breasted Grosbeak	S	PR	32
Passerina cyanea (Linnaeus)	Indigo Bunting	S	PO	11
Pipilo erythrophthalmus (Linnaeus)	Rufous-sided Towhee	S	PR	37
Spizella arborea (Wilson)	American Tree Sparrow	W		5
Spizella passerina (Bechstein)	Chipping Sparrow	S	PR	26
Spizella pusilla (Wilson)	Field Sparrow	S	PO	11
Pooecetes gramineus (Gmelin)	Vesper Sparrow	S	PO	11
Passerculus sanwichensis (Gmelin)	Savannah Sparrow	S	PO	11
Melospiza melodia (Wilson)	Song Sparrow	S	CO	79
Melospiza georgiana (Latham)	Swamp Sparrow	S	PR	79
Zonotrichia albicollis (Gmelin)	White-throated Sparrow	S	PR	26
Junco hyemalis (Linnaeus)	Dark-eyed Junco	W		5
Agelaius phoeniceus (Linnaeus)	Red-winged Blackbird	S	CO	74
Sturnella magna (Linnaeus)	Eastern Meadowlark	S	PO	16
Quiscalus quiscula (Linnaeus)	Common Grackle	S	PR	26
Molothrus ater (Boddaert)	Brown-headed Cowbird	P	PR	47
Icterus galbula (Linnaeus)	Northern Oriole	S	CO	21
Carpodacus mexicanus (Muller)	House Finch	P	PO	5
Carduelis tristis (Linnaeus)	American Goldfinch	P	PR	100
Passer domesticus (Linnaeus)	House Sparrow	P	PO	11

APPENDIX C: MAMMALS OF THE DORCHESTER SWAMP AREA OF NATURAL AND SCIENTIFIC INTEREST

The list is based on the following sources:

a) actual observations (including road-kills and other carcasses) or good secondary evidence (tracks, scats, etc.) within the study area. These species are preceded by an * and, unless otherwise indicated, were recorded by the author in 1985.

b) recent records (1978 and 1979) from the nearby "Putnam (Ivey) Tract", just one kilometre to the northeast of the A.N.S.I. (McLeod, 1979), of species which are probably present within the study site because of the availability of suitable habitat.

Taxonomic order and nomenclature follow The Mammals of Canada by Banfield (1974).

* Sorex cinereus Kerr — Masked Shrew
found dead by author in 1983.

* Blarina brevicauda (Say) — Short-tailed Shrew

* Sylvilagus floridanus (J.A.Allen) — Eastern Cottontail

* Tamias striatus (Linnaeus) — Eastern Chipmunk

* Marmota monax (Linnaeus) — Woodchuck

Sciurus carolinensis Gmelin — Grey/Black Squirrel

* Tamiasciurus hudsonicus (Erxleben) — American Red Squirrel

* Castor canadensis Kuhl — American Beaver
- roadkill on Highway 401 at east end of swamp ca. 1981 (North, pers. comm. 1985).

Peromyscus sp. — White-footed Mouse or Deer Mouse

* Ondatra zibethicus (Linnaeus) — Muskrat

* Microtus pennsylvanicus (Ord) — Meadow Vole

* Zapus hudsonius (Zimmermann) — Meadow Jumping Mouse

* Canis latrans Say — Coyote
- (Huber, pers. comm. 1985; Small and McBurney, 1977)

* Vulpes vulpes (Linnaeus) — Red Fox
- (Humphrey, pers. comm. 1985)

* Procyon lotor (Linnaeus) — Raccoon

Mustela erminea Linnaeus — Ermine

* Mustela vison Schreber — American Mink
- two trapped in swamp in 1983, two in 1984 and one in 1985 (Humphrey, pers. comm. 1985).

* Mephitis mephitis (Schreber) — Striped Skunk
- roadkills on Highways 401 and 73.

* Odocoileus virginianus (Zimmermann) — White-tailed Deer

APPENDIX D: AMPHIBIANS AND REPTILES OF THE DORCHESTER SWAMP AREA OF NATURAL AND SCIENTIFIC INTEREST

Those species listed were either recorded in the study area (preceded by an asterisk) or are likely present but went undetected during the study. Determination of the latter group is based on the widespread occurrence of a species in both Middlesex County (Hawkins, 1979b) and adjacent Oxford County (Milnes, 1946) together with the availability of suitable habitat within the A.N.S.I. Some of these have been recorded from the "Putnam (Ivey) Tract" approximately one kilometre northeast of the study area (McLeod, 1979) and are preceded by a "+" below.

Taxonomic order and nomenclature follow Cook (1980).

AMPHIBIANS

Necturus maculosus (Rafinesque)	Mudpuppy
Ambystoma maculatum (Shaw)	Yellow-spotted Salamander (Spotted Salamander)
Notophthalmus v. viridescens (Rafinesque)	Red-spotted Newt
* Plethodon cinereus (Green)	Eastern Redback Salamander
* Bufo a. americanus Holbrook	Eastern American Toad
* Hyla c. crucifer Wied	Northern Spring Peeper
* Hyla versicolor Le Conte	Tetraploid Gray Treefrog
* Pseudacris t. triseriata (Wied)	Midland Chorus Frog
Rana catesbeiana Shaw	Bullfrog (Small & McBurney, 1971)
* Rana clamitans melanota (Rafinesque)	Green Frog
* Rana sylvatica Le Conte	Wood Frog
* Rana pipiens Schreber	Northern Leopard Frog

REPTILES

+ Chelydra s. serpentina (Linnaeus)	Common Snapping Turtle
+ Emydoidea blandingi (Holbrook)	Blanding's Turtle
* Chrysemys picta marginata Agassiz	Midland Painted Turtle
+ Nerodia s. sipedon (Linnaeus)	Northern Water Snake
+ Storeria d. dekayi (Holbrook)	Northern Brown Snake
* Thamnophis s. sirtalis (Linnaeus)	Eastern Garter Snake
+ Lampropeltis t. triangulum (Lacepede)	Eastern Milk Snake

APPENDIX E: QUANTITATIVE ANALYSIS OF POINT - QUARTER AND QUADRAT VEGETATION SAMPLING DATA

Tables 8, 9 and 10 provide a summary of the quantitative information for two stands of hardwood-conifer swamp as well as the combined results of the tree species for the two; the latter providing an overall picture of the canopy composition for the swamp.

The sampling and calculation methods are described in Chapter II.

Additional species present in the communities represented by these stands but which were missed in the sampling process, may be determined by referring to the "communities of occurrence" column of Appendix A.

APPENDIX E

TABLE 8

HARDWOOD - CONIFER SWAMP (COMBINED N.E. & S.W. QUADRANTS)

[BLACK ASH (42) - WHITE CEDAR (42) - RED MAPLE (41) - YELLOW BIRCH (40)]

POINT - QUARTER ANALYSIS

TREE SPECIES	*FREQUENCY (no. of points)	RELATIVE FREQUENCY	DENSITY (no. of stems)	RELATIVE DENSITY	TOTAL BASAL AREA (cm^2)	AVG. BASAL AREA (cm^2)	RELATIVE DOMINANCE	IMPORTANCE VALUE
Fraxinus nigra	8	11.1	18	17.3	4613.6	256.3	13.5	41.9
Thuja occidentalis	10	13.9	18	17.3	3620.1	201.1	10.6	41.8
Acer rubrum	9	12.5	10	9.6	6587.1	658.7	19.2	41.3
Betula alleghaniensis	10	13.9	14	13.5	4432.3	316.6	12.9	40.3
Populus tremuloides	5	6.9	11	10.6	2375.2	215.9	6.9	24.4
Pinus strobus	5	6.9	5	4.8	3168.1	633.6	9.2	20.9
Ulmus americana	6	8.3	8	7.7	1468.2	183.5	4.3	20.3
Prunus serotina	3	4.2	4	3.8	1437.0	359.3	4.2	12.2
Tsuga canadensis	3	4.2	3	2.9	1307.2	435.7	3.8	10.9
Acer saccharinum	3	4.2	3	2.9	334.2	111.4	1.0	8.1
Larix laricina	2	2.8	2	1.9	1149.1	574.6	3.4	8.1
Fraxinus americana	2	2.8	2	1.9	773.0	386.5	2.3	7.0
Acer saccharum	1	1.4	1	1.0	1109.3	1109.3	3.2	5.6
Quercus rubra	1	1.4	1	1.0	992.6	992.6	2.9	5.3
Salix amygdaloides	1	1.4	1	1.0	506.5	506.5	1.5	3.9
Salix nigra	1	1.4	1	1.0	182.3	182.3	0.5	2.9
Picea glauca	1	1.4	1	1.0	102.6	102.6	0.3	2.7
Quercus macrocarpa	1	1.4	1	1.0	102.6	102.6	0.3	2.7

*based on 26 sample points

APPENDIX E

TABLE 9a

HARDWOOD - CONIFER SWAMP (NORTH - EAST QUADRANT)

[YELLOW BIRCH (57) - RED MAPLE (46) - WHITE CEDAR (45) - TREMBLING ASPEN (45)]

POINT - QUARTER ANALYSIS

TREE SPECIES	*FREQUENCY (no. of points)	RELATIVE FREQUENCY	DENSITY (no. of stems)	RELATIVE DENSITY	TOTAL BASAL AREA (cm^2)	AVG. BASAL AREA (cm^2)	RELATIVE DOMINANCE	IMPORTANCE VALUE
Betula alleghaniensis	7	17.1	11	19.6	3719.5	338.1	19.9	56.6
Acer rubrum	5	12.2	6	10.7	4219.1	703.2	22.6	45.5
Thuja occidentalis	6	14.6	10	17.9	2385.6	238.6	12.8	45.3
Populus tremuloides	5	12.2	11	19.6	2375.2	215.9	12.7	44.5
Pinus strobus	4	9.8	4	7.1	2588.3	647.1	13.8	30.7
Ulmus americana	3	7.3	3	5.4	424.8	141.6	2.3	15.0
Acer saccharinum	3	7.3	3	5.4	334.2	111.4	1.8	14.5
Quercus rubra	1	2.4	1	1.8	992.6	992.6	5.3	9.5
Salix amygdaloides	1	2.4	1	1.8	506.5	506.5	2.7	6.9
Tsuga canadensis	1	2.4	1	1.8	401.2	401.2	2.1	6.3
Fraxinus americana	1	2.4	1	1.8	182.3	182.3	1.0	5.2
Salix nigra	1	2.4	1	1.8	182.3	182.3	1.0	5.2
Fraxinus nigra	1	2.4	1	1.8	158.8	158.8	0.8	5.0
Prunus serotina	1	2.4	1	1.8	126.6	126.6	0.7	4.9
Quercus macrocarpa	1	2.4	1	1.8	102.6	102.6	0.5	4.7
SAPLING AND SHRUB SPECIES								
Thuja occidentalis	6	14.6	8	14.3	142.5	17.8	13.8	42.7
Betula alleghaniensis	3	7.3	7	12.5	223.9	32.0	21.8	41.6
Acer sacharinum	4	9.8	8	14.3	154.9	19.4	15.0	39.1
Acer rubrum	5	12.2	6	10.7	132.6	22.1	12.9	35.8
Fraxinus nigra	5	12.2	6	10.7	97.7	16.3	9.5	32.4
Pinus strobus	2	4.9	3	5.4	57.1	19.0	5.5	15.8
Salix bebbiana	3	7.3	3	5.4	27.6	9.2	2.7	15.4

APPENDIX E (Cont'd.)
TABLE 9a

SAPLING AND SHRUB SPECIES	*FREQUENCY (no. of points)	RELATIVE FREQUENCY	DENSITY (no. of stems)	RELATIVE DENSITY	TOTAL BASAL AREA (cm^2)	AVG. BASAL AREA (cm^2)	RELATIVE DOMINANCE	IMPORTANCE VALUE
Populus tremuloides	2	4.9	3	5.4	27.9	9.3	2.7	13.0
Ulmus americana	2	4.9	2	3.6	42.6	21.3	4.1	12.6
Prunus serotina	2	4.9	2	3.6	31.7	15.9	3.1	11.6
Amelanchier arborea	1	2.4	2	3.6	36.8	18.4	3.6	9.6
Fraxinus americana	1	2.4	1	1.8	11.4	11.4	1.1	5.3
Quercus macrocarpa	1	2.4	1	1.8	11.4	11.4	1.1	5.3
Viburnum lentago	1	2.4	1	1.8	11.4	11.4	1.1	5.3
Rhamnus cathartica	1	2.4	1	1.8	8.6	8.6	0.8	5.0
Salix discolor	1	2.4	1	1.8	6.1	6.1	0.6	4.8
Cornus racemosa	1	2.4	1	1.8	5.1	5.1	0.5	4.7

*based on 14 sample points

APPENDIX E

TABLE 9b

HARDWOOD - CONIFER SWAMP (NORTH - EAST QUADRANT)

[YELLOW BIRCH (57) - RED MAPLE (46) - WHITE CEDAR (45) - TREMBLING ASPEN (45)]

QUADRAT ANALYSIS

GROUND COVER SPECIES	*FREQUENCY (no. of quadrats)	RELATIVE FREQUENCY	TOTAL COVER ($0.1m^2$)	RELATIVE COVER	SIGNIFICANCE VALUE
Impatiens capensis	4	3.8	21	9.6	13.4
moss spp.	4	3.8	10	4.6	8.4
Rubus pubescens	3	2.9	8	3.7	6.6
Parthenocissus inserta	4	3.8	5	2.3	6.1
Agrostis stolonifera	1	0.9	10	4.6	5.5
Solidago rugosa	3	2.9	5	2.3	5.2
Aralia nudicaulis	1	0.9	8	3.7	4.6
Carex pedunculata	2	1.9	6	2.7	4.6
Carex stipata	3	2.9	3	1.4	4.3
Dryopteris cristata	3	2.9	3	1.4	4.3
Glyceria striata	2	1.9	5	2.3	4.2
Maianthemum canadense	2	1.9	5	2.3	4.2
Onoclea sensibilis	2	1.9	5	2.3	4.2
Coptis groenlandica	1	0.9	7	3.2	4.1
Conocephalum conicum (liverwort)	2	1.9	4	1.8	3.7
Galium palustre	2	1.9	4	1.8	3.7
Aster lateriflorus	2	1.9	3	1.4	3.3
Cornus racemosa seedlings	2	1.9	3	1.4	3.3
Mitella nuda	2	1.9	3	1.4	3.3
Chrysosplenium americanum	1	0.9	5	2.3	3.2
Cystopteris bulbifera	1	0.9	5	2.3	3.2
Equisetum arvense	1	0.9	5	2.3	3.2
Lonicera oblongifolia seedlings	1	0.9	5	2.3	3.2
Aster puniceus	2	1.9	2	0.9	2.8
Dryopteris spinulosa	2	1.9	2	0.9	2.8
Thuja occidentalis seedlings	2	1.9	2	0.9	2.8
Amphicarpa bracteata	1	0.9	4	1.8	2.7

APPENDIX E (Cont'd).
TABLE 9b

GROUND COVER SPECIES	*FREQUENCY (no. of quadrats)	RELATIVE FREQUENCY	TOTAL COVER ($0.1 m^2$)	RELATIVE COVER	SIGNIFICANCE VALUE
Fraxinus americana seedlings	1	0.9	4	1.8	2.7
Physocarpus opulifolius seedlings	1	0.9	4	1.8	2.7
Leersia oryzoides	1	0.9	3	1.4	2.3
Prunus virginiana seedlings	1	0.9	3	1.4	2.3
Pteridium aquilinum	1	0.9	3	1.4	2.3
Asarum canadense	1	0.9	2	0.9	1.8
Caltha palustris	1	0.9	2	0.9	1.8
Carex sp.	1	0.9	2	0.9	1.8
Cuscuta gronovii	1	0.9	2	0.9	1.8
Laportea canadensis	1	0.9	2	0.9	1.8
Myosotis laxa	1	0.9	2	0.9	1.8
Ribes americanum seedlings	1	0.9	2	0.9	1.8
Thelypteris palustris	1	0.9	2	0.9	1.8
Athyrium angustum	1	0.9	1	0.5	1.4
Boehmeria cylindrica	1	0.9	1	0.5	1.4
Botrychium virginianum	1	0.9	1	0.5	1.4
Carex intumescens	1	0.9	1	0.5	1.4
Carex leptalea	1	0.9	1	0.5	1.4
Chelone glabra	1	0.9	1	0.5	1.4
Cinna arundinacea	1	0.9	1	0.5	1.4
Circaea quadrisulcata	1	0.9	1	0.5	1.4
Clematis virginiana	1	0.9	1	0.5	1.4
Clintonia borealis	1	0.9	1	0.5	1.4
Cornus stolonifera seedlings	1	0.9	1	0.5	1.4
Epipactis helleborine	1	0.9	1	0.5	1.4
Eupatorium maculatum	1	0.9	1	0.5	1.4
Eupatorium perfoliatum	1	0.9	1	0.5	1.4
Fragaria virginiana	1	0.9	1	0.5	1.4

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APPENDIX E (Cont'd.)
TABLE 9b

GROUND COVER SPECIES	*FREQUENCY (no. of quadrats)	RELATIVE FREQUENCY	TOTAL COVER ($0.1m^2$)	RELATIVE COVER	SIGNIFICANCE VALUE
Galium asprellum	1	0.9	1	0.5	1.4
Galium triflorum	1	0.9	1	0.5	1.4
Geum aleppicum	1	0.9	1	0.5	1.4
Ilex verticillata seedlings	1	0.9	1	0.5	1.4
Lycopus americanus	1	0.9	1	0.5	1.4
Lycopus uniflorus	1	0.9	1	0.5	1.4
Muhlenbergia sp.	1	0.9	1	0.5	1.4
Prenanthes altissima	1	0.9	1	o.5	1.4
Prunella vulgaris	1	0.9	1	0.5	1.4
Quercus rubra seedlings	1	0.9	1	0.5	1.4
Rhamnus cathartica seedlings	1	0.9	1	0.5	1.4
Rhus radicans	1	0.9	1	0.5	1.4
Ribes triste seedlings	1	0.9	1	0.5	1.4
Sanicula marilandica	1	0.9	1	0.5	1.4
Sphenopholis intermedia	1	0.9	1	0.5	1.4
Symplocarpus foetidus	1	0.9	1	0.5	1.4
Taraxacum officinale	1	C.9	1	0.5	1.4
Taxus canadensis	1	0.9	1	0.5	1.4
Trientalis borealis	1	0.9	1	0.5	1.4
Trillium erectum	1	0.9	1	0.5	1.4
Viburnum lentago seedlings	1	0.9	1	0.5	1.4
Viola conspersa	1	0.9	1	0.5	1.4
Viola sp.	1	0.9	1	0.5	1.4

*based on 7 quadrats

APPENDIX E

TABLE 10a

HARDWOOD - CONIFER SWAMP (SOUTH-WEST QUADRANT)

[BLACK ASH (87) - WHITE CEDAR (38) - RED MAPLE (36) - WHITE ELM (27)]

POINT - QUARTER ANALYSIS

TREE SPECIES	*FREQUENCY (no. of points)	RELATIVE FREQUENCY	DENSITY (no. of stems)	RELATIVE DENSITY	TOTAL BASAL AREA (cm^2)	AVG. BASAL AREA (cm^2)	RELATIVE DOMINANCE	IMPORTANCE VALUE
Fraxinus nigra	7	22.6	17	35.4	4454.8	262.0	28.6	86.6
Thuja occidentalis	4	12.9	8	16.7	1234.5	154.3	7.9	37.5
Acer rubrum	4	12.9	4	8.3	2368.0	592.0	15.2	36.4
Ulmus americana	3	9.7	5	10.4	1043.4	208.7	6.7	26.8
Prunus serotina	2	6.5	3	6.3	1310.4	436.8	8.4	21.2
Betula alleghaniensis	3	9.7	3	6.3	712.8	237.6	4.6	20.6
Larix laricina	2	6.5	2	4.2	1149.1	574.6	7.4	18.1
Tsuga canadensis	2	6.5	2	4.2	906.0	453.0	5.8	16.5
Acer saccharum	1	3.2	1	2.1	1109.3	1109.3	7.1	12.4
Fraxinus americana	1	3.2	1	2.1	590.7	590.7	3.8	9.1
Pinus strobus	1	3.2	1	2.1	579.8	579.8	3.7	9.0
Picea glauca	1	3.2	1	2.1	102.6	102.6	0.7	6.0
SAPLING AND SHRUB SPECIES								
Fraxinus nigra	8	24.2	16	33.3	419.9	26.2	32.3	89.8
Carpinus caroliniana	3	9.1	4	8.3	206.6	51.7	15.9	33.3
Betula alleghaniensis	3	9.1	4	8.3	147.4	36.9	11.3	28.7
Thuja occidentalis	3	9.1	5	10.4	81.6	16.3	6.3	25.8
Populus tremuloides	2	6.1	3	6.3	104.8	34.9	8.1	20.5
Tilia americana	2	6.1	3	6.3	26.8	8.9	2.1	14.5
Ulmus americana	2	6.1	2	4.2	39.1	19.6	3.0	13.3

APPENDIX E (Cont'd.)
TABLE 10a

SAPLING AND SHRUB SPECIES	*FREQUENCY (no. of points)	RELATIVE FREQUENCY	DENSITY (no. of stems)	RELATIVE DENSITY	TOTAL BASAL AREA (cm^2)	AVG. BASAL AREA (cm^2)	RELATIVE DOMINANCE	IMPORTANCE VALUE
Prunus virginiana	2	6.1	2	4.2	33.6	16.8	2.6	12.9
Acer saccharum	1	3.0	2	4.2	36.7	18.4	2.8	10.0
Acer rubrum	1	3.0	1	2.1	55.2	55.2	4.2	9.3
Fraxinus americana	1	3.0	1	2.1	55.2	55.2	4.2	9.3
Tsuga canadensis	1	3.0	1	2.1	55.2	55.2	4.2	9.3
Hamamelis virginiana	1	3.0	1	2.1	15.0	15.0	1.2	6.3
Salix discolor	1	3.0	1	2.1	11.2	11.2	0.9	6.0
Cornus racemosa	1	3.0	1	2.1	6.1	6.1	0.5	5.6
Fraxinus pennsylvanica	1	3.0	1	2.1	5.1	5.1	0.4	5.5

*based on 12 sample points

APPENDIX E

TABLE 10b

HARDWOOD- CONIFER SWAMP (SOUTH-WEST QUADRANT)

[BLACK ASH (87) - WHITE CEDAR (38) - RED MAPLE (36) - WHITE ELM (27)]

QUADRAT ANALYSIS

GROUND COVER SPECIES	*FREQUENCY (no. of quadrats)	RELATIVE FREQUENCY	TOTAL COVER ($0.1m^2$)	RELATIVE COVER	SIGNIFICANCE VALUE
Symplocarpus foetidus	6	4.9	24	10.0	14.9
Impatiens capensis	6	4.9	13	5.4	10.3
moss spp.	5	4.1	14	5.9	10.0
Glyceria striata	6	4.9	12	5.0	9.9
Rubus pubescens	5	4.1	8	3.3	7.4
Aster puniceus	4	3.3	9	3.8	7.1
Onoclea sensibilis	3	2.5	10	4.2	6.7
Thelypteris palustris	4	3.3	8	3.3	6.6
Rhus radicans	4	3.3	7	2.9	6.2
Boehmeria cylindrica	4	3.3	4	1.7	5.0
Osmunda cinnamomea	1	0.8	10	4.2	5.0
Thuja occidentalis seedlings	1	0.8	10	4.2	5.0
Equisetum arvense	2	1.6	8	3.3	4.9
Solanum dulcamara	2	1.6	8	3.3	4.9
Bidens connata var. petiolata	3	2.5	4	1.7	4.2
Vitis riparia seedlings	3	2.5	4	1.7	4.2
Carex comosa	2	1.6	6	2.5	4.1
Ribes americanum seedlings	2	1.6	6	2.5	4.1
Dryopteris cristata	3	2.5	3	1.3	3.8
Solidago rugosa	3	2.5	3	1.3	3.8
Cornus stolonifera seedlings	2	1.6	5	2.1	3.7
Cornus racemosa seedlings	2	1.6	3	1.3	2.9
Mitella nuda	2	1.6	3	1.3	2.9
Parthenocissus inserta seedlings	2	1.6	3	1.3	2.9
Pilea pumila	2	1.6	3	1.3	2.9
Tiarella cordifolia	2	1.6	3	1.3	2.9
Carex interior	2	1.6	2	0.8	2.4

APPENDIX E (Cont'd.)
TABLE 10b

GROUND COVER SPECIES	*FREQUENCY (no. of quadrats)	RELATIVE FREQUENCY	TOTAL COVER ($0.1 m^2$)	RELATIVE COVER	SIGNIFICANCE VALUE
Conocephalum conicum (liverwort)	2	1.6	2	0.8	2.4
Eupatorium maculatum	2	1.6	2	0.8	2.4
Prunella vulgaris	2	1.6	2	0.8	2.4
Solidago patula	2	1.6	2	0.8	2.4
Viola sp.	2	1.6	2	0.8	2.4
Carex bromoides	1	0.8	3	1.3	2.1
Carex hystericina	1	0.8	2	0.8	1.6
Carex stipata	1	0.8	2	0.8	1.6
Leersia oryzoides	1	0.8	2	0.8	1.6
Senecio aureus	1	0.8	2	0.8	1.6
Ulmus rubra seedlings	1	0.8	2	0.8	1.6
Acer rubrum seedlings	1	0.8	1	0.4	1.2
Amphicarpa bracteata	1	0.8	1	0.4	1.2
Athyrium angustum	1	0.8	1	0.4	1.2
Betula alleghaniensis seedlings	1	0.8	1	0.4	1.2
Carex bebbii	1	0.8	1	0.4	1.2
Carex leptalea	1	0.8	1	0.4	1.2
Carex lupulina	1	0.8	1	0.4	1.2
Carex sp.	1	0.8	1	0.4	1.2
Cicuta maculata	1	0.8	1	0.4	1.2
Cuscuta gronovii	1	0.8	1	0.4	1.2
Dryopteris spinulosa	1	0.8	1	0.4	1.2
Euonymus obovatus	1	0.8	1	0.4	1.2
Eupatorium perfoliatum	1	0.8	1	0.4	1.2
Galium palustre	1	0.8	1	0.4	1.2
Larix laricina seedlings	1	0.8	1	0.4	1.2
Lemna minor	1	0.8	1	0.4	1.2

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APPENDIX E (Cont'd.)
TABLE 10b

GROUND COVER SPECIES	*FREQUENCY (no. of quadrats)	RELATIVE FREQUENCY	TOTAL COVER ($0.1m^2$)	RELATIVE COVER	SIGNIFICANCE VALUE
Lonicera oblongifolia seedlings	1	0.8	1	0.4	1.2
Lycopus uniflorus	1	0.8	1	0.4	1.2
Sambucus canadensis seedlings	1	0.8	1	0.4	1.2
Smilacina stellata	1	0.8	1	0.4	1.2
Taxus canadensis	1	0.8	1	0.4	1.2
Ulmus americana seedlings	1	0.8	1	0.4	1.2
Viola renifolia	1	0.8	1	0.4	1.2

* based on 8 quadrats

APPENDIX F: RARE VASCULAR PLANT ATLAS FORMS

Specific location and collection data is given here along with additional ecological data for six rare Ontario vascular plants that occur within or immediately adjacent to the Dorchester Swamp A.N.S.I. All are listed by Argus and White (1977) and/or in the Atlas of the Rare Vascular Plants of Ontario , edited by Argus and White and which supersedes the former for those families treated therein.

Included are:

Sporobolus asper (Michaux) Kunth

Juncus marginatus Rostk.

Spiranthes ochroleuca (Rydb. ex Britt.) Rydb.

Collinsonia canadensis L.

Bidens discoidea (T. & G.) Britt.

Eupatorium purpureum L.

Juglans nigra was also present but was obviously introduced to the site where it occurs in association with Pinus strobus in a plantation on the eastern boundary of the area.

Photocopies of the information given for those species treated in the above-mentioned atlas are also provided here.

RARE VASCULAR PLANT ATLAS
SOUTHWESTERN REGION
MINISTRY OF NATURAL RESOURCES

LATIN NAME AND AUTHORITY: Sporobolus asper (Michaux) Kunth
(and common name) (rough dropseed)

FAMILY: POACEAE (GRAMINEAE)

LOCATION (site, county and township; UTM grid reference number):

Dorchester Swamp Area of Natural and Scientific Interest (M.N.R.); Lot 13, Conc. I, N. Dorchester Twp., Middlesex County; UTM Grid No. 986566

ECOLOGY

HABITAT (moisture, soil type, community association, light intensity, etc.):

dry, gravelly soil and sandy loam of open, access road shoulder and open enclosed area (occasionally mowed) respectively of Hwy. 401 and Hwy. 73 south-west cloverleaf loop

NUMBER OF POPULATION(S) IN STUDY AREA: 2 (approximately 10 m apart)

POPULATION DYNAMICS: Population 1: 8 separate clumps of several culms each (access road shoulder); all flowering September 4, 1985
Population 2: 5 clumps of several culms each (enclosed area of loop); all non-flowering June 17, 1985

SOURCES OF INFORMATION: (McLeod, 1985) Life Science Inventory of Dorchester Swamp A.N.S.I.

NOTES:

CURRENT STATUS INFORMATION: Rare in: Ontario (Reznicek, 1984); Canada (Kershaw et al., 1976)

COLLECTION INFORMATION: Dates: June 17 and September 4, 1985
Collector and collection numbers: D. McLeod 8527, 8524
Determined by: D. McLeod
Verified by: D. McLeod and W. Crins
Voucher locations: 8527 (TRTE), 8524 (TRTE,UWO)

REQUIRED ATTACHMENTS: Site Map (1:10,000 photo overlay)

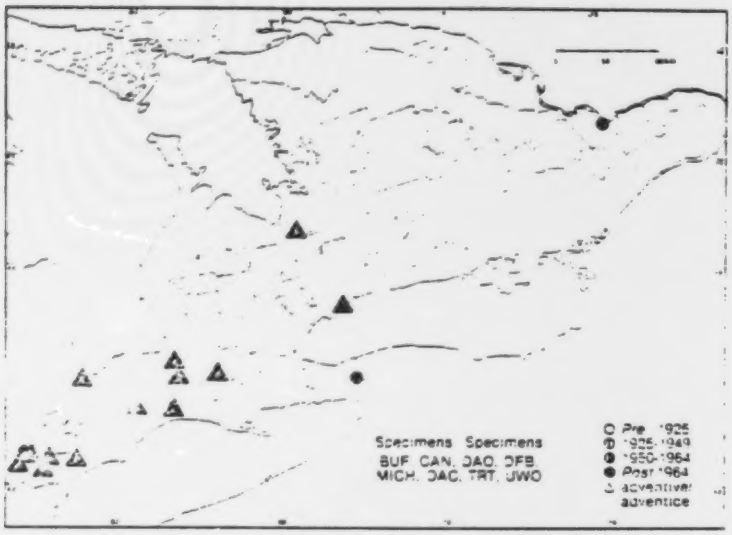
Refer to Figure 3 of this report (Scale 1:5000)

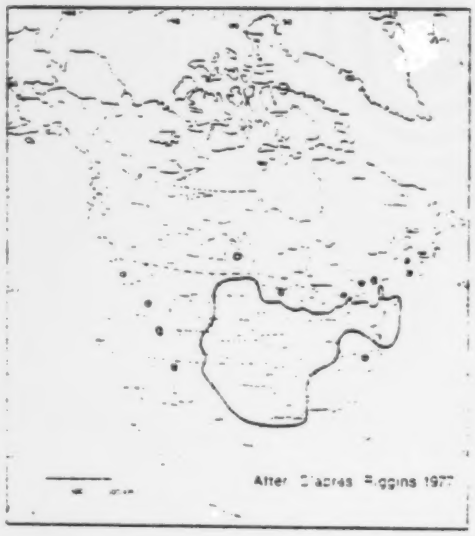
SURVEYOR'S NAME: D. McLeod DATE: November, 1985

POACEAE

Sporobolus asper **(Michx.) Kunth var. *asper***

Rough dropseed
Sporobole





HABITAT: Dry prairies; dry, sandy meadows and shores; roadsides and railway tracks.

STATUS: Rare in Quebec and New Brunswick. Probably extirpated in Massachusetts; rare in Arizona, Delaware, Vermont, and Virginia.

NOTES: Many colonies of this species in Ontario are clearly adventive. However, it may have been part of Ontario's indigenous flora in the prairie relicts near Windsor, in prairie-like areas atop the Niagara Gorge (where collected as early as 1918), and along the Ottawa River. It is now spreading aggressively in sandy soils along railways and roadsides. The species probably is often overlooked because the inflorescence is not exserted from the sheath until very late, if at all, the plant thus appearing sterile. The North American map includes all varieties.

HABITAT: Prairies sèches, rivages et prés secs et sablonneux, bas-côté des routes, et voies ferrées.

SITUATION: Rare au Québec et au Nouveau-Brunswick. Probablement éradiquée au Massachusetts; rare en Arizona, au Delaware, au Vermont et en Virginie.

REMARQUES: De nombreuses colonies de cette espèce sont nettement adventices en Ontario. Toutefois, cette espèce a peut-être fait partie de la flore indigène de la province dans les prairies résiduelles des environs de Windsor, dans les milieux apparentés à des prairies au sommet de la gorge du Niagara (où on l'a recoltait déjà en 1918) et sur les berges de la rivière des Outaouais. Aujourd'hui, elle se répand rapidement dans les sols sablonneux le long des voies ferrées et sur le bas-côté des routes. Sans doute passe-t-elle souvent inaperçue du fait que son inflorescence ne devient exserte que très tardivement, et dès même si elle sort de sa gaine, ce qui a fait paraître stérile. La carte de l'Amérique du Nord comprend toutes les variétés.

REFERENCES / SOURCES

Dore, W.G., & J. McNeill. 1980. Grasses of Ontario. Agriculture Canada, Monograph 26. 566 pp.

Riggins, R. 1977. A biosystematic study of the *Sporobolus asper* complex (Gramineae). Iowa State Journal of Research 51:287-321.

A.A. Reznicek

1984

RARE VASCULAR PLANT ATLAS
SOUTHWESTERN REGION
MINISTRY OF NATURAL RESOURCES

LATIN NAME AND AUTHORITY: Juncus marginatus Rostk.
(and common name) (margined rush)

FAMILY: JUNCACEAE

LOCATION (site, county and township; UTM grid reference number):

Dorchester Swamp Area of Natural and Scientific Interest (M.N.R.); Lot 13, Conc. I, N. Dorchester Twp., Middlesex County; UTM grid No. 986562 (40I/14)

ECOLOGY

HABITAT (moisture, soil type, community association, light intensity, etc.):

damp, sandy loam in open, low herb area of hydro line corridor adjacent to southern boundary of A.N.S.I.

NUMBER OF POPULATION(S) IN STUDY AREA: 1 discovered

POPULATION DYNAMICS: 20 plants counted within a 3 m diameter circle each bearing several mature capsules

SOURCES OF INFORMATION: (McLeod, 1985) Life Science Inventory of Dorchester Swamp A.N.S.I.

NOTES:

CURRENT STATUS INFORMATION: Rare in: Ontario (Argus & White, 1977); Canada (Kershaw et al., 1976)

COLLECTION INFORMATION: Date: September 14, 1985
Collector and collection number: D. McLeod 8525
Determined by: D. McLeod
Verified by: D. McLeod & W. Crins
Voucher location: TRTE

REQUIRED ATTACHMENTS: Site Map (1:10,000 photo overlay)

Refer to Figure 3 of this report (Scale 1:5000)

SURVEYOR'S NAME: D. McLeod DATE: November, 1985

RARE VASCULAR PLANT ATLAS
SOUTHWESTERN REGION
MINISTRY OF NATURAL RESOURCES

LATIN NAME AND AUTHORITY: Spiranthes ochroleuca (Rydb. ex Britt.) Rydb.
(and common name) (yellow ladies'-tresses)

FAMILY: ORCHIDACEAE

LOCATION (site, county and township; UTM grid reference number):

Dorchester Swamp Area of Natural and Scientific Interest (M.N.R.); Lot 13, Conc. I, North Dorchester Twp., Middlesex County; UTM Grid No. 986565, 986562

ECOLOGY

HABITAT (moisture, soil type, community association, light intensity, etc.):

Population 1: dry, sandy loam in open area between Pinus plantation and access road of south-west loop of Hwy. 401 and Hwy. 73 cloverleaf (occasionally mowed)
Population 2: sandy loam of open, low herb area in hydro line corridor adjacent to southern boundary of ANSI.

NUMBER OF POPULATION(S) IN STUDY AREA: 2 discovered (see grid numbers above)

POPULATION DYNAMICS: Population 1: 27 plants flowering or in bud on September 4 & 8, 1985
Population 2: 2 flowering plants September 14, 1985

SOURCES OF INFORMATION: (McLeod, 1985) Life Science Inventory of Dorchester Swamp A.N.S.I.

NOTES:

CURRENT STATUS INFORMATION: Rare in Ontario (Catling et al., 1982)

COLLECTION INFORMATION: Dates: September 4 (specimen); September 8 (2 colour slides)
Collector and collection number: D. McLeod 851
Determined by: D. McLeod
Verified by: D. McLeod and W. Crins
Voucher location: TRTE

REQUIRED ATTACHMENTS: Site Map (1:10,000 photo overlay)

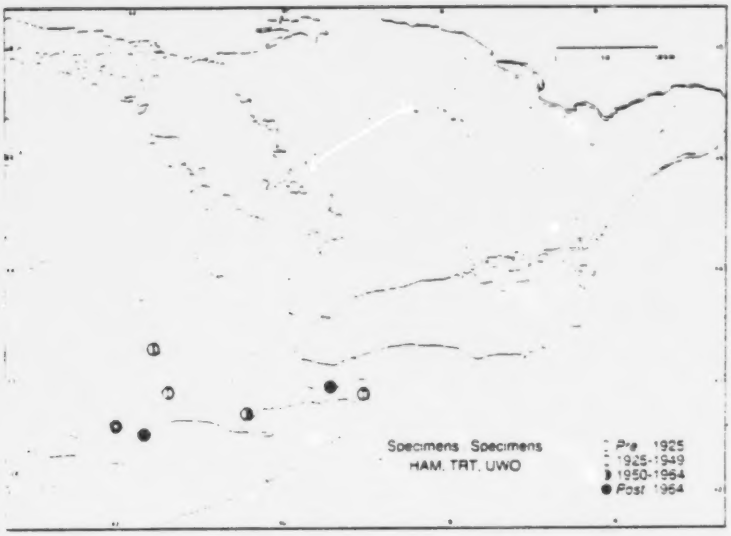
Refer to Figure 3 of this report (Scale 1:5000)

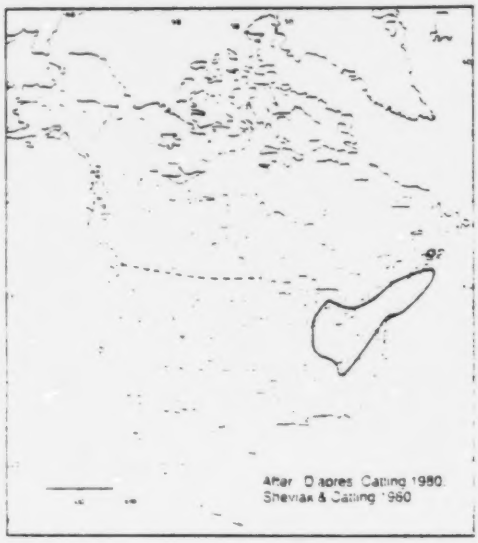
SURVEYOR'S NAME: D. McLeod DATE: November, 1985

ORCHIDACEAE

Spiranthes ochroleuca **(Rydb. ex Britt.) Rydb.**
(*S. cernua* (L.) Richard var. *ochroleuca* (Rydb.) Ames)

Yellow ladies'-tresses
Spiranthe





HABITAT. Sandy meadows, prairies, and roadsides.

NOTES. Easily overlooked because of its similarity to the common and widespread *S. cernua*.

HABITAT: Prés sablonneux, prairies et le long des routes.

REMARQUES: Difficile à reconnaître en raison de sa similitude avec *S. cernua*, espèce commune et répandue.

REFERENCES SOURCES

Brown, J.R., & P.M. Catling. 1980. The status and distribution of yellow ladies'-tresses orchid (*Spiranthes ochroleuca* (Rydb.) Rydb.) in Ontario. Ontario Field-Biologist. (In press. sous presses).

Catling, P.M. 1980. Systematics of *Spiranthes* L.M.C. Richard in northeastern North America. Ph.D. thesis, University of Toronto. 550 pp. Unpublished. Inédit.

Luer, C.A. 1975. The native orchids of the United States and Canada. The New York Botanical Garden, New York. 361 pp.

Sheviak, C.J. 1976. Biosystematic study of the *Spiranthes cernua* complex with emphasis on the prairies. Ph.D. thesis, Harvard University. Unpublished. Inédit.

Sheviak, C.J., & P.M. Catling. 1980. The identity and status of *Spiranthes ochroleuca* (Rydberg) Rydberg. Brittonia 82: 525-562.

P.M. Catling, R.E. Whiting, D.J. White, & P.J. Maher
1982

RARE VASCULAR PLANT ATLAS
SOUTHWESTERN REGION
MINISTRY OF NATURAL RESOURCES

LATIN NAME AND AUTHORITY: Collinsonia canadensis L.
(and common name) (horsebalm)

FAMILY: LAMIACEAE (LABIATAE)

LOCATION (site, county and township; UTM grid reference number):

Dorchester Swamp Area of Natural and Scientific Interest (M.N.R.); Lot 14, Conc. I, N. Dorchester Twp., Middlesex County; UTM Grid No. 977563 (40I/14)

ECOLOGY

HABITAT (moisture, soil type, community association, light intensity, etc.):

damp, sandy loam depression of mixed forest

NUMBER OF POPULATION(S) IN STUDY AREA: 1 discovered

POPULATION DYNAMICS: 15 fruiting plants counted

SOURCES OF INFORMATION: (McLeod, 1985) Life Science Inventory of Dorchester Swamp A.N.S.I.

NOTES:

CURRENT STATUS INFORMATION: Rare in: Ontario (Argus & White, 1977); Canada (Kershaw et al., 1976)

COLLECTION INFORMATION: Date: October 13, 1985
Collector and collection number: D. McLeod 8526
Determined by: D. McLeod
Verified by: D. McLeod
Voucher location: TRTE

REQUIRED ATTACHMENTS: Site Map (1:10,000 photo overlay)

Refer to Figure 3 of this report (Scale 1:5000)

SURVEYOR'S NAME: D. McLeod DATE: November, 1985

RARE VASCULAR PLANT ATLAS
SOUTHWESTERN REGION
MINISTRY OF NATURAL RESOURCES

LATIN NAME AND AUTHORITY: Bidens discoidea (T. & G.) Britt.
(and common name) (small beggarticks)

FAMILY: ASTERACEAE (COMPOSITAE)

LOCATION (site, county and township; UTM grid reference number):

Dorchester Swamp Area of Natural and Scientific Interest (M.N.R.); N 1/2 Lot 10, Conc. I, N. Dorchester Twp., Middlesex County; UTM Grid No. 004575 (40I/15e)

ECOLOGY

HABITAT (moisture, soil type, community association, light intensity, etc.):

wet, muck soil of opening in thicket swamp

NUMBER OF POPULATION(S) IN STUDY AREA: 1 discovered

POPULATION DYNAMICS: several flowering plants

SOURCES OF INFORMATION: (McLeod, 1985) Life Science Inventory of Dorchester Swamp A.N.S.I.

NOTES: "Due to its similarity to the common B. frondosa L., however, it may be more overlooked than rare." (White & Maher, 1983); also known from Westminster Ponds, London, in Middlesex County (McLeod, 1981)

CURRENT STATUS INFORMATION: Rare in Ontario and Canada (White & Maher, 1983)

COLLECTION INFORMATION: Date: August 11, 1985
Collector and collection number: D. McLeod 8528
Determined by: D. McLeod
Verified by: D. McLeod
Voucher location: TRTE

REQUIRED ATTACHMENTS: Site Map (1:10,000 photo overlay)

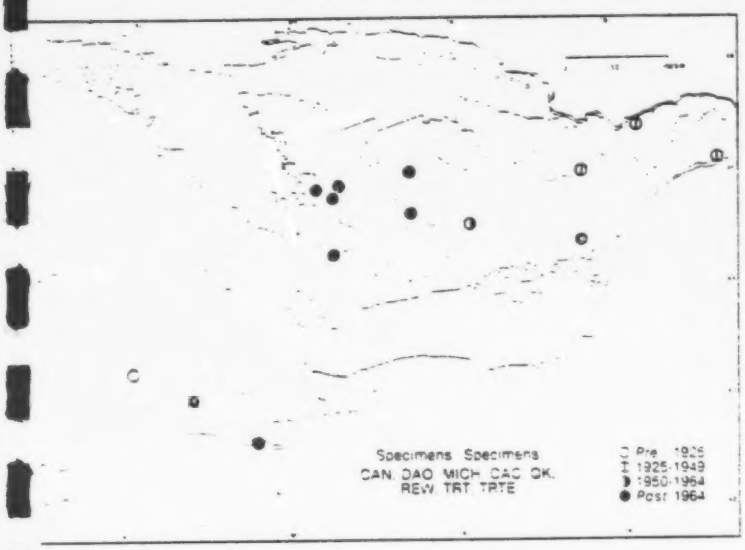
Refer to Figure 3 of this report (Scale 1:5000)

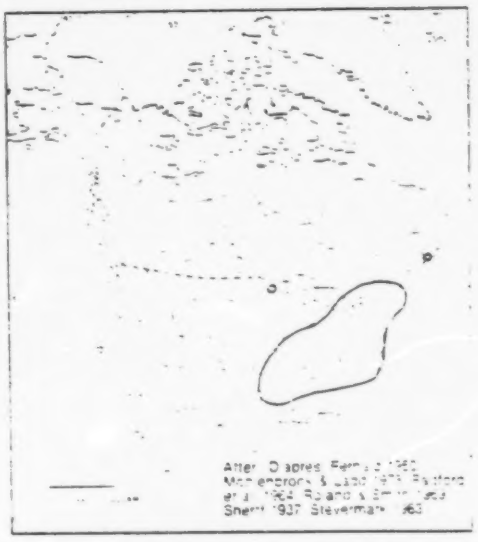
SURVEYOR'S NAME: D. McLeod DATE: November, 1985

ASTERACEAE

***Bidens discoidea* (T. & G.) Britt.**

Small beggar-ticks
Bident discoïde





HABITAT: Moist shores, deciduous swamps, and wet ground.

STATUS: Rare in Canada, Minnesota, New Hampshire and Vermont.

NOTES: Widespread in southern Ontario, but apparently rare wherever it occurs. Due to its similarity to the common *B. frondosa* L., however, it may be more overlooked than rare.

HABITAT: Rives humides, marécages de feuillus et sols détremcés.

SITUATION: Rare au Canada, au Minnesota, au New Hampshire et au Vermont.

REMARQUES: Répandue dans le sud de l'Ontario, mais apparemment rare dans les zones où on la trouve. Cependant, étant donné sa ressemblance avec l'espèce commune *B. frondosa* L., il se peut qu'elle soit plus difficile à reconnaître que rare.

REFERENCES / SOURCES

Sherff, E.E. 1937. The genus *Bidens*. Field Museum of Natural History, Botanical Series 16:1-709.

D.J. White & P.V. Maher

1983

RARE VASCULAR PLANT ATLAS
SOUTHWESTERN REGION
MINISTRY OF NATURAL RESOURCES

LATIN NAME AND AUTHORITY: Eupatorium purpureum L.
(and common name) (sweet Joe-Pye-weed)

FAMILY: ASTERACEAE (COMPOSITAE)

LOCATION (site, county and township; UTM grid reference number):

Dorchester Swamp Area of Natural annd Scientific Interest (M.N.R.); N 1/2 Lot 10, Conc. I, N. Dorchester Twp., Middlesex County; UTM Grid No. 998572 (40I/14)

ECOLOGY

HABITAT (moisture, soil type, community association, light intensity, etc.):

open, understory of drier, sandy loam rise in deciduous swamp

NUMBER OF POPULATION(S) IN STUDY AREA: 1 discovered

POPULATION DYNAMICS: 9 flowering plants; most heads just beginning to expand

SOURCES OF INFORMATION: (McLeod, 1985) Life Science Inventory of Dorchester Swamp A.N.S.I.

NOTES: "Very similar to the common and widespread E. maculatum L. and possibly more overlooked than rare." (White & Maher, 1983)

CURRENT STATUS INFORMATION: Rare in Ontario and Canada (White & Maher, 1983)

COLLECTION INFORMATION: Date: August 12, 1985
Collector and collection number: D. McLeod 8529
Determined by: D. McLeod
Verified by: D. McLeod & W. Crins
Voucher location: TRTE

REQUIRED ATTACHMENTS: Site Map (1:10,000 photo overlay)

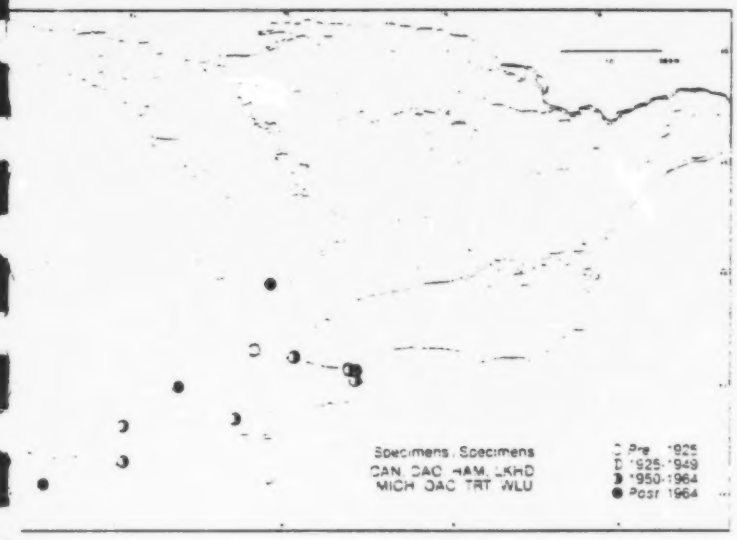
Refer to Figure 3 of this report (Scale 1:5000)

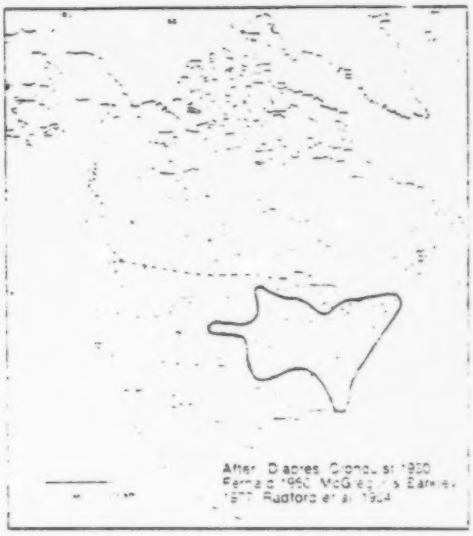
SURVEYOR'S NAME: D. McLeod DATE: November, 1985

ASTERACEAE

***Eupatorium purpureum* L.**

Sweet joe-pye-weed
Eupatoire





HABITAT: Dryish, open rocky woods and thickets.

STATUS: Rare in Canada.

NOTES: Very similar to the common and widespread *E. maculatum* L. and possibly more overlooked than rare. The latter prefers marshes and wet meadows compared to the drier habitats of *E. purpureum*.

HABITAT: Fourrés et bois rocailleux ouverts plutôt secs.

SITUATION: Rare au Canada.

REMARQUES: Etant donné sa grande ressemblance avec l'espèce commune et répandue *E. maculatum* L., *E. purpureum* est probablement plus difficile à reconnaître que rare. L'eupatoire maculée préfère les marécages et les prés humides aux habitats plus secs de *E. purpureum*.

REFERENCES SOURCES

Grant, W.F. 1959. A cytotaxonomic study in the genus *Eupatorium*. American Journal of Botany 40:729-742.

D.J. White & P.V. Maher

1983

APPENDIX G

ONTARIO HERONRY INVENTORY

HERONRY REGISTRATION

Please type or print clearly. Fill in as much as possible and return promptly, even if incomplete, to: OHI, Long Point Bird Observatory, P.O. Box 160, Port Rowan, Ont. NOE 1MO.

1. Name and address of contributor: Dave McLeod

92 Stroud Cr., Unit 48, London, Ontario N6E 1Y8 Phone: (519) 681-4218

Name(s) and address(es) of people who could supply more details on this heronry:

None known. Not previously recorded at M.N.R., Aylmer District Office (P. Hunter, Pers. Comm. 1985) nor reported by earlier surveys of this portion of Dorchester Swamp. (Walshe, 1970; Small and McBurney, 1977); would suggest more recent establishmer

2. Primary species in colony: Great Blue Heron (Ardea herodias L.)

Other species in colony: None

3. Colony location (county or district, township, distance and direction from nearest town or other map features. Please include military grid if possible): Middlesex County, N. Dorchester Twp.

Conc. I, N Half Lot 9; U.T.M. 006576 Map 40-I/15e (Putnam)

** On a separate sheet of paper, provide detailed and specific instructions on how a stranger could find this colony from the nearest town (as a guide to persons assigned to census the colony in future). Include a detailed sketch map of the route to the immediate vicinity of the heronry and, if possible, a topographical map (1-50,000) with the colony location marked.

4. Colony history: When was this colony established? (Enter "at least since" or "unknown" if the exact year is unknown):

Unknown

What is the most up-to-date information you have on the status of this colony:

Most recent year of reliable information: 1985

Status in that year (check one): Known that some birds nested X, Known that no birds nested_____, Status unknown but nests present_____, No nests present_____

Other (Please explain):_____

5. Size of colony:
Number of nests counted____x____ or estimated_____(check one)

in the year___1985_____ was____8 -___

Number of the nests which appeared to be in use by breeding herons:_____8_____

How was your census done? (e.g. counted from distance with binoculars, tagged nest trees, etc.): Heronry was deserted when discovered (Aug. 11/85); nests approx. 18-21 M up in 6 trees; 5 cottonwood (Populus deltoides) and 1 peach-leaved willow (Salix amyg daloides) - Abundant whitewash on shrub foliage and mud directly beneath each nest; Approx. 50% shrub cover; ground almost dried out but likely standing water present earlier. *

If you have additional counts or estimates for other years, please record all of the information in question 5 for each count at the bottom of this sheet or on a separate page.

6. Land ownership: Unknown_____, Known_____X_____.

If known, check whether land is private_____, municipal_____.

provincial____X____, federal_____. industrial_____, or other_____.

Name and address of owner: Upper Thames River Conservation Authority, P.O. Box 6278, Station D, London, Ont. N5W 5S1

7. Disturbance to colony: Give details of type of disturbance (e.g. people, vehicles, land clearing, drainage, recreational or urban development, etc.): None evident.

Is this disturbance light_____, moderate_____, heavy _____ or extreme_____.

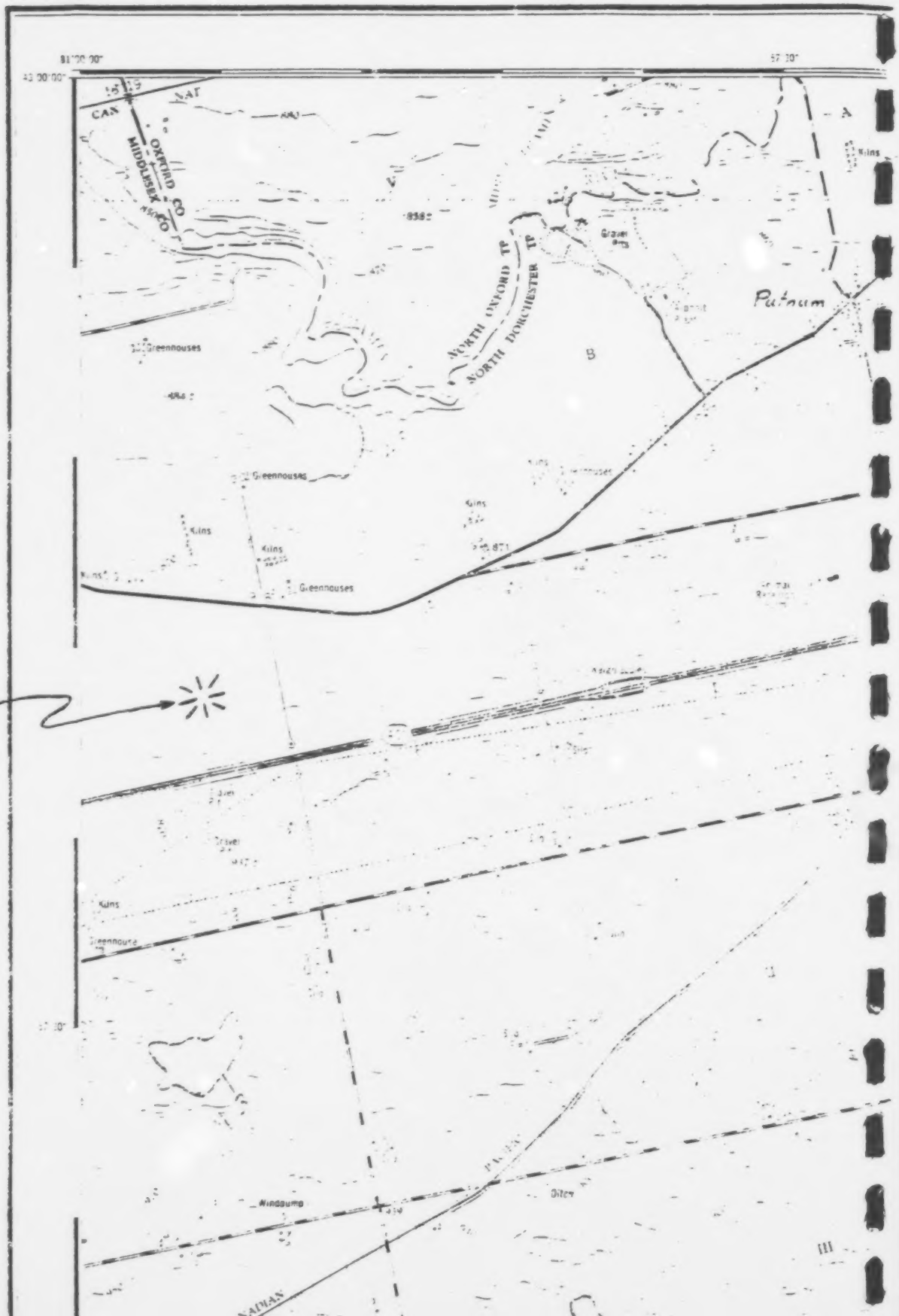
Give details of any future threats you know of:_____

8. If you know of any published data on this colony (study results, size, history, etc.), please give actual references:

* cover; ground almost dried out but likely standing water present earlier.

- THANK YOU FOR YOUR HELP! -

40-I/15e 1:25,000



APPENDIX H: FISH OF THE DORCHESTER SWAMP CREEK WATERSHED

The following list is based on a stream survey by the Ontario Ministry of Natural Resources in 1974 and on a study by Ward in 1981 for the Ministry. The latter study sampled fish at seven stations, three of which were located within the A.N.S.I. itself. Those species present at any of these three stations are preceded by an asterisk (*) in the list below. The remainder of the species listed except for Brown Trout and Rainbow Trout were recorded from any of four stations on the main branch of the creek downstream from the A.N.S.I., or from either of two stations on lower tributaries of the creek.

Taxonomic order and nomenclature follow Scott and Crossman (1973).

	Ichthyomyzon fossor (Reighard and Cummins)	Northern Brook Lamprey
[1]	Salmo gairdneri (Richardson)	Rainbow Trout
[2]	Salmo trutta Linnaeus	Brown Trout
[3]*	Salvelinus fontinalis (Mitchill)	Brook Trout (Char)
*	Umbra limi (Kirtland)	Central Mudminnow
*	Chrosomus eos Cope	Northern Redbelly Dace
	Hybognathus hankinsoni Hubbs	Brassy Minnow
	Nocomis biguttatus (Kirtland)	Hornyhead Chub
	Nocomis micropogon (Cope)	River Chub
	Notemigonus crysoleucas (Mitchill)	Golden Shiner
	Notropis cornutus (Mitchill)	Common Shiner
	Pimephales promelas Rafinesque	Fathead Minnow
*	Rhinichthys atratulus (Hermann)	Blacknose Dace
	Semotilus atromaculatus (Mitchill)	Creek Chub
	Catostomus commersoni (Lacepede)	White Sucker
	Ictalurus melas (Rafinesque)	Black Bullhead
	Noturus flavus Rafinesque	Stonecat
*	Culaea inconstans (Kirtland)	Brook Stickleback
	Ambloplites rupestris (Rafinesque)	Rock Bass
	Lepomis cyanellus Rafinesque	Green Sunfish
	Lepomis gibbosus (Linnaeus)	Pumpkinseed
*	Etheostoma caeruleum Storer	Rainbow Darter
*	Etheostoma nigrum Rafinesque	Johnny Darter

[1] 1500 stocked from 1967 to 1979 (Ward, 1982)

[2] unknown number stocked through the 1950s and 1960s (ibid.)

[3] 12,500 stocked through the 1950s and 1960s (ibid.)

APPENDIX I: A PRELIMINARY LIST OF BUTTERFLIES FOR THE DORCHESTER SWAMP AREA OF NATURAL AND SCIENTIFIC INTEREST

The following list was compiled from incidental sightings made during 1985 within the study area (preceded by an asterisk), as well as from records for the "Putnam (Ivey) Tract", just one kilometre to the northeast of the A.N.S.I., made during 1978 and 1979 (McLeod, 1979). The latter are included because of a high probability of the occurrence of these species within the A.N.S.I. given the similarity in habitat types and vascular plant species between the two areas.

Taxonomy and nomenclature follow A field guide to the butterflies of North America, east of the Great Plains by Klots (1951).

	SATYRIDAE	SATYR AND WOOD NYMPH FAMILY
	Lethe eurydice Johannson	Eyed Brown
*	Euptychia cymela Cramer	Little Wood Satyr
	Cercyonis pegala Fabricius	Wood Nymph, (Blue-eyed Grayling)
	DANAIDAE	MONARCH FAMILY
*	Danaus plexippus Linnaeus	Monarch
	NYMPHALIDAE	BRUSH-FOOTED BUTTERFLY FAMILY
	Speyeria cybele Fabricius	Great Spangled Fritillary
*	Boloria toddi Holland	Meadow Fritillary
	Euphydryas phaeton Drury	Baltimore
*	Phyciodes tharos Drury	Pearl Crescent
*	Polygonia interrogationis Fabricius	Question Mark
*	Polygonia faunus Edwards	Green Comma
	Nymphalis milberti Latreille	Milbert's Tortoise Shell
*	Nymphalis antiopa Linnaeus	Mourning Cloak
*	Vanessa atalanta Linnaeus	Red Admiral
	Vanessa cardui Linnaeus	Painted Lady
*	Limenitis archippus Cramer	Viceroy
*	Limenitis arthemis astyanax Fabricius	Red Spotted Purple
	LYCAENIDAE	GOSSAMER WINGED BUTTERFLY FAMILY
	Strymon acadica Edwards	Acadian Hairstreak
	Lycaena thoe Guerin	Bronze Copper
*	Lycaenopsis argiolus Linnaeus	Spring Azure
	PAPILIONIDAE	SWALLOWTAIL FAMILY
	Papilio polyxenes asterius Stoll	Black Swallowtail
*	Papilio glaucus Linnaeus	Tiger Swallowtail
*	Papilio troilus Linnaeus	Spicebush Swallowtail

APPENDIX I (Cont'd.)

PIERIDAE	WHITE AND SULPHUR FAMILY
* Colias eurytheme Boisduval	Alfalfa Butterfly
* Colias philodice Latreille	Common Sulphur
* Pieris rapae Linnaeus	European Cabbage Butterfly
HESPERIIDAE	SKIPPER FAMILY
* Adopaea lineola Ochsenheimer	European Skipper

APPENDIX J: PHOTOGRAPHS OF THE DORCHESTER SWAMP AREA OF NATURAL AND SCIENTIFIC INTEREST

All photographs described below were taken by the author in 1985 except where indicated otherwise. The symbols N,E, S and W refer to the major points of the compass and are used here to indicate the direction in which a photograph was taken. All UTM Grid Numbers refer to either map number 40I/14 or 40I/15.

L1 Hardwood Swamp; red maple - yellow birch - white elm - silver maple - black ash (Association 5d). Note yellow markers for snowmobile trail. 85-05-10; NW; 968565.

L2 Hardwood Swamp; trembling aspen - red maple - silver maple - blue beech (Association 5e). 85-05-10; NE; 964569.

L3 Hardwood Swamp; silver maple - cottonwood - white ash - black ash - white elm - red maple (Association 5b). 85-05-19; SE; 988568.

L4 Tall Shrub Swamp; willow - dogwood - white cedar - common elderbery - high-bush cranberry (Association 6b). 85-05-08; W; 983572.

L5 Same as L4.

L6 Hardwood - Conifer Swamp; (Association 3b). Note hemlock tree established on old stump. 85-10-13; W; 982562.

L7 Upland Mixed Forest; hemlock - sugar maple - black cherry - yellow birch (Association 2a). Note stand used as part of archery target shooting course. 85-10-13; SW; 979562.

L8 Same as L7. Note deer hunting platform.

L9 Tall Shrub Swamp; dogwood - willow (Association 6a). Photo by W. Murch. 85-06-26; N; 988563.

L10 Same as L9. 85-06-05; E; 987564.

L11 Pond; Note yellow pond lily (Nuphar variegatum) at far side of pond; photo by W. Murch. 85-06-26; N; 988563.

L12 Pond margin with floating patch of yellow pond lily. Photo by W. Murch. 85-06-26; NE; 988563.

L13 North-east quadrant of cloverleaf area; Note nodding ladies'-tresses orchids among ground cover (i.e. the white flower spikes). 85-09-03; SE; 987568.

L14 Hydro line corridor; Note cat-tails in wet depression. 85-10-13; E; 982561.

L15 Hydro line corridor; Note open, low-herb meadow on drier and higher elevation. 85-10-13; W; 985562.

L16 Grass-pink (Calopogon tuberosus) (an orchid); Photo by W. Murch. 85-06-26; 987564.

L17 Small yellow lady's-slipper (Cypripedium calceolus var. parviflorum) (an orchid). 85-05-19; 991569.

L18 Showy lady's-slipper (Cypripedium reginae) (an orchid). 81-06-25; 983568.

L19 Patch of the above at same location.

L20 Loesel's twayblade (Liparis loeselii) (an orchid). Photo by W. Murch. 85-06-26; 987564.

L21 Ragged-fringed orchis (Platanthera lacera) (an orchid). Photo by W. Murch. 85-06-26; 987564.

L22 Small purple-fringed orchis (Platanthera psycodes) (an orchid). 85-07-09; 982563.

L23 Nodding ladies'-tresses (Spiranthes cernua) (an orchid). 85-09-03; 987568.

L24 Habitat shot for L23 in cloverleaf area. 85-09-03; 987568.

L25 Yellow nodding ladies'-tresses (Spiranthes ochroleuca). A provincially rare orchid species. 85-09-08; 985566.

L26 Larger group of L25.

L27 Habitat shot for L25 and L26.

L28 Interrupted fern (Osmunda claytoniana). 85-05-10; 967565.

L29 Close-up of L28 showing early development of fertile portion of frond (dark pinnae).

L30 Spice bush (Lindera benzoin) with mature fruit. 85-09-22; 985564.

L31 Pitcher-plant (Sarracenia purpurea). Photo by W. Murch. 85-06-26; 987564.

L32 Naked mitrewort (Mitella nuda). 85-05-08; 982571.

L33 Wild geranium (Geranium maculatum). 85-06-05; 986576.

L34 Dwarf ginseng (Panax trifolius). 85-05-10; 966565.

L35 Habitat shot with associated ground cover species for L34.

L36 Male spice bush silk moth or promethea moth. 85-07-11; 992574.

L37 Same as L36.

L38 Male (smaller) and female phantom crane flies (Bittacomorpha clavipes) copulating. 85-05-10; 967565.

L39 Archery target shooting course station. 85-10-13; E,979562.

L40 Close-up of target in L39.

APPENDIX K: CHECKLIST OF MOSSES, LIVERWORTS AND LICHENS OF THE IVEY (PUTNAM) TRACT

Taxonomic order and nomenclature of the mosses, follow Mosses of the Great Lakes Forest , by Crum. The liverworts follow How to Know the Mosses and Liverworts, by Conrad, and the lichens, How to Know the Lichens, by Hale.

Species determinations in this list, were made by Dr. Frank Cook, a bryologist in the Plant Sciences Department at the University of Western Ontario.

MUSCI MOSSES

CLASS SPHAGNOPSIDA

FAMILY SPHAGNACEAE

Sphagnum squarrosum Crome

CLASS BYOPSIDA

FAMILY FISSIDENTACEAE

Fissidens adiantoides Hedw.

FAMILY DITRICHACEAE

Ceratodon purpureus (Hedw.) Brid.

FAMILY DICRANACEAE

Dicranum viride (Sull. & Lesq.) Lindb.
Dicranum montanum Hedw.

FAMILY POTTIACEAE

SUBFAMILY TRICHOSTOMOIDEAE

Barbula unguiculata Hedw.

FAMILY HEDWIGIACEAE

Hedwigia ciliata (Hedw.) P.-Beauv.

FAMILY BRYACEAE

Pohlia wahlenbergii (Web. & Mohr) Andr.
Bryum sp.
Rhodobryum roseum (Hedw.) Limpr. (ontariense (Kindb.) Kindb.)

FAMILY MNIACEAE

Mnium cuspidatum Hedw.
Mnium marginatum (With.) P.-Beauv.
Plagiomnium cuspidatum (Hedw.) Kop.
Plagiomnium ellipticum (Brid.) Kop.
Rhizomnium appalachianum Kop.

FAMILY TIMMIACEAE

Timmia megapolitana Hedw.

FAMILY ORTHOTRICHACEAE

Orthotrichum pumilum Sw.
Ulota crispa (Hedw.) Brid.

FAMILY LEUCODONTACEAE

Leucodon brachypus Brid.

FAMILY NECKERACEAE

Neckera pennata Hedw. (new for Middlesex County)

FAMILY LESKEACEAE

Leskea polycarpa Hedw.
Anomodon attenuatus (Hedw.)

FAMILY THUIDIACEAE

Thuidium delicatulum (Hedw.) BSG

FAMILY AMBLYSTEGIACEAE

Campylium chrysophyllum (Brid.) J. Lange
Amblystegium sp.
Drepanocladus aduncus (Hedw.) Warnst.
Calliergon cordifolium (Hedw.) Kindb.

FAMILY BRACHYTHECIACEAE

Brachythecium rutabulum (Hedw.) BSG
Brachythecium rivulare BSG
Cirriphyllum piliferum (Hedw.) Grout.

FAMILY ENTODONTACEAE

Entodon seductrix (Hedw.) C.M.
Plagiothecium cavifolium (Brid.) Iwats.
Plagiothecium denticulatum (Hedw.) BSG

FAMILY SEMATOPHYLLACEAE

Callicladium haldanianum (Grev.) Crum
Brotherella recurvans (Mx.) Fl.

FAMILY HYPNACEAE

Platygyrium repens (Brid.) BSG
Pylaisiella selwynii (Kindb.) Crum, Steere, & Anders
Hypnum imponens Hedw.

FAMILY CLIMACIACEAE

Climacium dendroides (Hedw.) Web. & Mohr

FAMILY HYLOCOMIACEAE

Rhytidiadelphus triquetrus (Hedw.) Warnst.

FAMILY TETRAPHIDACEAE

Tetraphis pellucida Hedw.

FAMILY POLYTRICHACEAE

Polytrichum juniperinum Hedw.

HEPATICAE-LIVERWORTS

ORDER JUNGERMANNIALES

FAMILY FRULLANIACEAE

Frullania eboracensis Gotlsche

ORDER MARCHANTIALES

FAMILY MARCHANTIACEAE

Conocephalum conicum (L.) Wiggers.

LICHENS

STRATIFIED FOLIOSE LICHEN

Peltigera sp.
Parmelia sp.

FRUTICOSE LICHENS

Cladonia rangiferina (L.) Wigg. - Reindeer Moss
Cladonia cristatella Tuck. - British Soldiers

APPENDIX L: HERBARIUM LABELS FOR PROVINCIALLY RARE VASCULAR PLANT SPECIES WITHIN THE DORCHESTER SWAMP AREA OF NATURAL AND SCIENTIFIC INTEREST

851 **PLANTS OF ONTARIO** TRTE
UNIVERSITY OF TORONTO-ERINDALE (TRTE) ONTARIO, CANADA

Spiranthes ochroleuca (Rydb. ex Britt.) Rydb.
Map No. 40I/14
U.T.M. 986656
N. W.

COUNTY MIDDLESEX

LOCALITY Dorchester Swamp A.N.S.I. (M.N.R.
Lot 13, Conc. I, N. Dorchester Twp.

HABITAT dry, sandy loam in open area between Pinus plantation and access road of south-west loop of Hwy. 401 and Hwy. 73 cloverleaf.

DATE Sept. 4, 1985 COLLECTOR & NO. Dave McLeod | 851

NOTES Rare in Ontario (Catling et al., 1982)

DET.

Dave McLeod

8526 PLANTS OF ONTARIO TRTE
UNIVERSITY OF TORONTO-ERINDALE (TRTE) ONTARIO, CANADA

Collinsonia canadensis L.

Map No. 40I/14
U.T.M. 977563

COUNTY MIDDLESEX N. W.

LOCALITY Dorchester Swamp A.N.S.I. (M.N.R.)
Lot 14, Conc. I, N. Dorchester Twp.

HABITAT damp, sandy loam depression of mixed forest

DATE Oct. 13, 1985 COLLECTOR & NO. Dave McLeod | 8526
NOTES Rare in Ontario (Argus & White, 1977)
Rare in Canada (Kershaw et al., 1976) DET.
Dave McLeod

8525 PLANTS OF ONTARIO TRTE
UNIVERSITY OF TORONTO-ERINDALE (TRTE) ONTARIO, CANADA

Juncus marginatus Rostk.

Map No. 40I/14
U.T.M. 986562

COUNTY MIDDLESEX N. W.

LOCALITY Dorchester Swamp A.N.S.I. (M.N.R.)
Lot 13, Conc. I, N. Dorchester Twp.

HABITAT damp, sandy loam of open hydro line corridor
adjacent to southern boundary of A.N.S.I.

DATE Sept. 14, 1985 COLLECTOR & NO. Dave McLeod | 8525
NOTES Rare in Ontario (Argus & White, 1977)
Rare in Canada (Kershaw et al., 1976) DET.
Dave McLeod

8524 PLANTS OF ONTARIO TRTE, UWO
UNIVERSITY OF TORONTO-ERINDALE (TRTE) ONTARIO, CANADA

Sporobolus asper (Michaux) Kunth

Map No. 40I/14
U.T.M. 986566

COUNTY MIDDLESEX N. W.

LOCALITY Dorchester Swamp A.N.S.I. (M.N.R.)
Lot 13, Conc. I, N. Dorchester Twp.

HABITAT dry, gravelly soil of open, access road shoulder
of Hwy. 401 and Hwy. 73 south-west cloverleaf loop

DATE Sept. 4, 1985 COLLECTOR & NO. Dave McLeod | 8524
NOTES Rare in Ontario (Reznicek, 1984)
Rare in Canada (Kershaw et al., 1976) DET.
Dave McLeod

8529 PLANTS OF ONTARIO TRTE
UNIVERSITY OF TORONTO-ERINDALE (TRTE) ONTARIO, CANADA

Eupatorium purpureum L.

Map No. 40I/14
U.T.M. 998572

COUNTY MIDDLESEX N. W.

LOCALITY Dorchester Swamp A.N.S.I. (M.N.R.)
N½ Lot 10, Conc. I, N. Dorchester Twp.

HABITAT open understory of drier, sandy loam rise in deciduous swamp

DATE Aug. 12, 1985 COLLECTOR & NO. Dave McLeod | 8529
NOTES Rare in Ontario & Canada
(White & Maher, 1983) DET.
Dave McLeod

8528 PLANTS OF ONTARIO TRTE
UNIVERSITY OF TORONTO-ERINDALE (TRTE) ONTARIO, CANADA

Bidens discoidea (T.& G.) Britt.

Map No. 40I/15e
U.T.M. 004575

COUNTY MIDDLESEX N. W.

LOCALITY Dorchester Swamp A.N.S.I. (M.N.R.)
N½ Lot 10, Conc. I, N. Dorchester Twp.

HABITAT wet, muck soil of opening in thicket swamp

DATE August 11,1985 COLLECTOR & NO. Dave McLeod | 8528
NOTES Rare in Ontario and Canada
(White & Maher, 1983) DET.
Dave McLeod

8527 PLANTS OF ONTARIO TRTE
UNIVERSITY OF TORONTO-ERINDALE (TRTE) ONTARIO, CANADA

Sporobolus asper (Michaux) Kunth

Map No. 40I/14
U.T.M. 986566

COUNTY MIDDLESEX N. W.

LOCALITY Dorchester Swamp A.N.S.I. (M.N.R.)
Lot 13, Conc. I, N. Dorchester Twp.

HABITAT dry, sandy loam of open area enclosed within Hwy. 401 & Hwy. 73 south-west cloverleaf loop

DATE June 17, 1985 COLLECTOR & NO. Dave McLeod | 8527
NOTES Rare in Ontario (Reznicek, 1984)
Rare in Canada (Kershaw et al., 1976) DET.
Dave McLeod

Dorchester

Thames River

1a

1a
5b
6w
6w

PLANT COMMUNITIES/ ASSOCIATIONS AND SIGNIFICANT FEATURES

FIG 3

Plant Communities / Associations

1 Upland Deciduous Forest
- a sugar maple - black cherry - basswood - white ash
- b trembling aspen - black cherry - sugar maple - blue beech - witch-hazel

2 Upland Mixed Forest
- a hemlock - sugar maple - black cherry - yellow birch
- b hemlock - blue beech - white pine - white oak - red maple - white ash
- c hemlock - sugar maple - silver maple - American beech - white ash - red maple - black cherry
- d hemlock - yellow birch - red maple - basswood - black ash - white ash
- e white cedar - yellow birch - blue beech - black cherry - trembling aspen - white pine - white ash

3 Hardwood-Conifer Swamp
- a yellow birch - red maple - white cedar - trembling aspen - white pine - white elm - silver maple
- b black ash - white cedar - red maple - white elm - black cherry - yellow birch - tamarack - hemlock
- c yellow birch - silver maple - black ash - red maple - basswood- white cedar - white elm - hemlock

4 Conifer-Hardwood Swamp
- a white cedar - yellow birch - black ash - hemlock - red maple - tamarack - white pine
- b white cedar - tamarack - trembling aspen - hemlock - red maple - black ash - yellow birch
- c white cedar - hemlock - red maple - yellow birch - white elm - black ash

5 Hardwood Swamp
- a silver maple - red maple - yellow birch
- b silver maple - cottonwood - white ash - black ash - white elm - red maple
- c silver maple - willow
- d red maple - yellow birch - white elm - silver maple - black ash
- e trembling aspen - red maple - silver maple - blue beech - balsam poplar - black ash - black cherry

6 Tall Shrub Swamp
- a dogwood - willow - winterberry - mountain-holly - blueberry
- b willow - dogwood - white cedar - common elderberry - highbush cranberry - nannyberry - alder-leaved buckthorn

7 Cat-tail Marsh

8 Low Shrub-Herb Community: black huckleberry - climbing nightshade - sedge - large cranberry - moss

9 Pond Vegetation
- yellow pond lily - variable pondweed
- OW - unvegetated open water

10 Plantation
- a red pine - white pine - scotch pine
- b white pine - white spruce - Norway spruce - European larch
- c white pine - black walnut - European larch

11 Highway Rights-of-Way: graminoid - weedy alien community complexes

12 Hydro Line Corridor: community complex

Significant Features

Aa	Alopecurus aequalis	Nd	Halenia deflexa
Ab	Aster borealis	Ho	Hierochloe odorata
Bd	Bidens discoidea	Jb	Juncus balticus

1a
2b
3c
2c
1a
3a
Cs
Ws
Cd
Nw
6b
11b
4a
5b
Cc
Aa
Sc
Cb
Pn
Ec
Dc
Cpg
Jb
Tm
11a
Pp
5b
Gm
Es
Bw
Oc
5e
6b
3c
Cb
Sp
La
4c
10a
OW
Cpe
Macdonald-Cartier Freeway
11b
4b
Sa
Cy
Ho
Si
Cl
Mg
Sm
Gb
Cpa
Gv
Pl
So
Pp
Cpu
Ap
Car
Su
Pa
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2e
Ro
Pt
Cd
5d
Wp
6b
3b
Oc
Cs
Gm
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12
11b
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2d
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11b
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Ws
Cd
Nw
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Cc
Cb
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5c
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Pn
Ec
Dc
Cpg
Jb
Cpg
Jb
Tm
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11a
Cb
3c
Sp
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Pp
5b
11a
Macdonald-Cartier Freeway
11b
Gm
4b
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Sm
Pp
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Significant Features

Aa	Alopecurus aequalis	Hd	Halenia deflexa
Ab	Aster borealis	Ho	Hierochloe odorata
Bd	Bidens discoidea	Jb	Juncus balticus
Bg	Blue-gray Gnatcatcher	Jm	Juncus marginatus
Bw	Blue-winged Warbler	La	Lycopodium annotinum
Cb	Cardamine bulbosa	Li	Lycopodium inundatum
Cc	Carex cephaloidea	Mg	Muhlenbergia glomerata
Cd	Cardamine douglassii	Nw	Northern Waterthrush
Ci	Calamagrostis inexpansa	Oc	Osmunda claytoniana
Cl	Carex laevivaginata	Pa	Pyrola asarifolia var. purpurea
Cpa	Carex pallescens	Pl	Panicum linearifolium
Cpe	Carex peckii	Pn	Puccinellia nuttalliana
Cpg	Carex praegracilis	Pp	Proserpinaca palustris
Cpr	Carex prairea	Pt	Panax trifolium
Cpu	Carex pseudocuprea	Ro	Ribes odoratum
Cx	Collinsonia canadensis	Sa	Sporobolus asper
Cy	Chenopodium botrys	Sc	Stellaria calycantha
Dc	Deschampsia caespitosa	Si	Sphenopholis intermedia var. pilosa
Ec	Eleocharis compressa	Sm	Sparganium minimum
Ep	Eupatorium purpureum	So	Spiranthes ochroleuca
Es	Equisetum sylvaticum	Sp	Schizachne purpurascens var. pubescens
Gb	Glyceria borealis	Su	Solidago uliginosa
Gbh	Great Blue Heron (heronry site)	Ta	Triglochin maritima
Gm	Glyceria melicaria	Wc	Wolffia columbiana
Gv	Gnaphalium viscosum	Wp	Wolffia punctata
Gw	Golden-winged Warbler	Ws	White-throated Sparrow
		Tv	Yellow-throated Vireo

- Gm — significant vascular plant species location
- Ws — significant bird location
- community/association boundary
- A.N.S.I. boundary
- Proposed revisions to A.N.S.I. boundary
- edge of forested areas
- hydro line
- Proposed addition to A.N.S.I.
- Proposed deletion from A.N.S.I.

2b
3c
2c
Ws
Cd
Nw
6b
11b
4a
3a
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Cb
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Pn
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11a
11a
Es
Bw
5e
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Sp
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Ho
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Ph
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Cpu
Ab
Lg
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9
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4c
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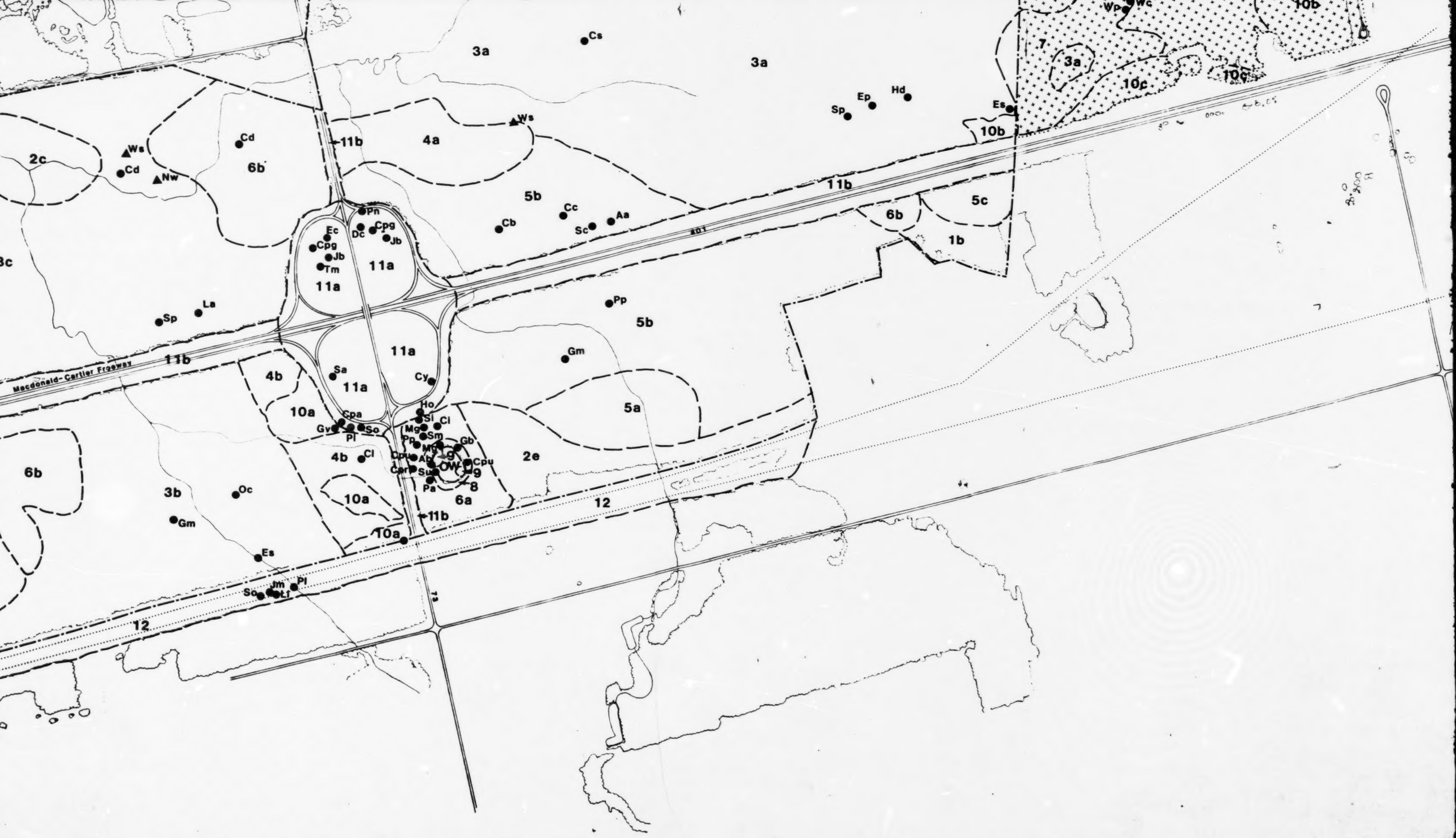
12


Macdonald-Cartier Freeway
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11b
12
3a
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5c
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1b
10b
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4b
10a
2e
5a
6a
2c
3b
3c
Cs
Ws
Cd
Nw
Ep
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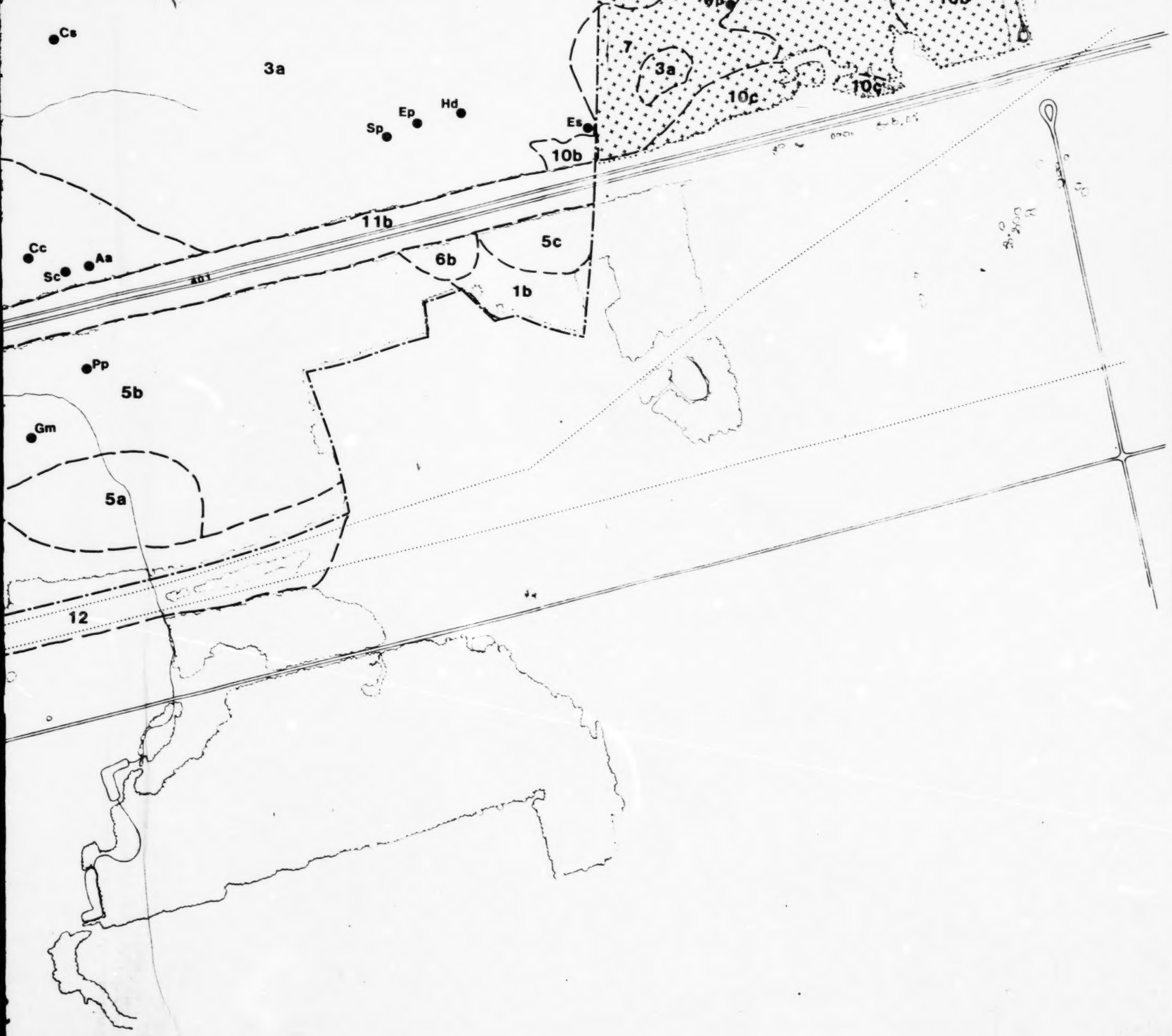

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Ministry of Natural Resources

Ontario

DORCHESTER SWAMP AREA OF NATURAL AND SCIENTIFIC INTEREST

DATE 87.09.10

SCALE 1:5000

Metres 100 50 0 100 200 300 400

Source: 1978 Aerial Photos